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THE IRON TRADE REVIEW

Vol. LXIII Cleveland, October 24, 1918 *No. 17*

Peace Questions Coming to Front

But War Orders Continue to Flow to Iron and Steel Industry and Production is Being Driven Hard—Cancellations Expected on Termination of Fighting—Drastic Clause Put in Ship Steel

PEACE discussions continue to deflect thought into afterwar channels, but the high-driven activities of the mills and furnaces belie any expectation of early change in the military situation. Record-breaking production in some directions has been relaxed under the effects of the influenza epidemic, though not to any considerable degree. In the east, operations again are recovering and at Pittsburgh it is reported that less than 10 per cent of the workmen are out. The promises of new iron and steel tonnage records for October still stand.

Review War Contracts

A rather complacent view is being taken over the future of present war contracts should peace become an actuality during the next few months. Many of these contracts including those placed by the navy and the Emergency Fleet corporation as well as some executed by the army, represent firm business and will not be subject to cancellation based on the end of the war. Manifestly, however, recent events have caused the federal shipping officials to more seriously consider afterwar factors. A clause has just been inserted in new ship steel contracts which provides for the cancellation of the order by the shipping board whenever it is to the country's interest to do so. Closely associated with these developments is the cancellation within the week by an eastern shipbuilding company of a tonnage of steel to be used in yard extensions, and also of a tonnage for the construction of a marine boiler plant at Maurer, N. J. Provision is made for the termination of army ordnance contracts by an adjustment for materials manufactured or under order. Full indemnification for any expenditure for construction or operation, as well as a certain profit, in the event of cancellation is prescribed to the Steel corporation and the Midvale Steel & Ordnance Co. in connection with the two gun plants now being built for the government by these organizations. Contracts placed in this country by the allied governments generally are of a firm character It is provided in certain of these orders, such as the British purchases of shell steel, that the tonnage undelivered at the conclusion of peace shall be replaced by an equivalent amount of other rolled material.

War Orders Keep Up

There is not the slightest evidence of any let-up in war orders for the American and allied forces. An order for 40,000 freight cars for General Pershing's command has just been closed. Distribution of 150,000 tons of barbed wire is being arranged for. New orders for portable track for France bring the total recently placed to 60,000 tons. Tanks and army trucks in large numbers have been distributed to middle-western builders. Two new coke plants to be built at Cleveland and Fairmont, W. Va., have been contracted for to supply the government with by-products for high explosives. An interesting development probably connected with the swiftly-moving political events is the reinstatement of a portion of a large Russian freight car order held up since 1917. Steel work is about to come up for navy construction at Charleston, W. Va., the site selected several years ago for the federal armor plate plant.

Closing Iron for 1919

As the last quarter moves on, pig iron consumers more generally are pressing forward with their requirements for the first half of 1919. Allocations for that period now are heavy, about 100,000 tons of various grades having been placed during the week. Some Virginia, Alabama and eastern makers now are taking first half orders quite freely from consumers performing war work. The sales of the largest Virginia producer provide for cancellation of unfilled tonnages as of July 1, 1919. For semisteel shell production, a foundry interest in the Chicago district has been allocated approximately 40,000 tons.

OCTOBER 24, 1918

THE IRON TRADE REVIEW

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Where Publicity Has Become Vital

NO subject connected with the government regulation of industry today possesses a greater importance for the average manufacturer or distributor of iron and steel as that of priority. In fact, it is the vital factor in his every day existence for on his relations to the system of priority must depend his ability to obtain those materials which are the veritable lifeblood of his business. The time which has been required from the average industrial plant for the study and application of the principles of priority indicates the extent to which the system has fastened itself unextricably to the routine of business.

Erected on a wholly original basis and with little of precedent for a guidance, it has taken many months for a settled code of procedure to be dictated by experience for the simplest and most practical workings of the plan. New conditions constantly arising have called for elaboration here and a modification there of the regulations. In fact, as one of the priority officials put it, no one has been more astounded at the ramifications developed by certain rules and regulations put forth in the maturing of the system than the priority authorities themselves. This constant rise of new questions and problems has resulted in the issuance of innumerable circulars, supplements, etc. by the priorities committee issued in the usual official language. Adequate measures not always have been taken for the proper supply or circulation of the various regulations and their modifications to all those who were immediately concerned with them. The convolutions of the system have been so far sweeping that the priority authorities themselves probably could not have foreseen the measure of publicity required to convey a proper appreciation of the working of the plan to all those who must apply it. The result has been that a tremendous amount of confusion and a lack of proper understanding has been shown on all sides with regard to the exact meaning and intent of various provisions.

It is, therefore a very hopeful and wholesome sign that the priorities committee now is undertaking effective methods to clarify the uncertain points of the priority regulations as now interpreted and to show how they shall control in individual circumstances. Meetings such as that held in New York the past week under the auspices of the Merchants' association, which is covered in detail in this issue, if repeated in different parts of the country will do much to straighten out the perplexities that now confront the various manufacturers and distributors. Representatives of the priorities division at that time comprehensively discussed new phases of priority which have developed lately and passed officially on different problems which individual companies raised for their opinion. The result was a very material addition to the knowledge of the latitude and application of the priority system. It is understood that somewhat similar meetings are to be held in other districts and that the offices of the twenty regional organizations are to be utilized as means of conveying authoritative advice to buyers and sellers in each territory. This is a movement for which the need has been acute, and it is to be hoped that it will be carried forward in a comprehensive way and that without delay.

Labor Put to the Test

THE adoption of the employes' representation plan by the Bethlehem Steel Corp., closely following such action by the Midvale Steel & Ordnance Co., is of more than passing significance. When two companies of such size and importance enter into so original a method of dealing with their employes and that probably not without deep study, it would seem to indicate that the principle embodied is likely to find a more widespread application. Whether the plan will prove mutually agreeable and advantageous remains to be seen; at present it is in the experimental stage.

This much may be said for the plan at its inauguration; it is bringing capital and labor together in a more friendly spirit with a determination to reconcile their fundamental differences. Whatever makes for a better understanding between the employe and his employer, whatever contributes to making the employe satisfied and establishes mutual confidence will go a long way toward removing disorganizing influences which are ever at work to accomplish the opposite purpose. Employers who are contemplating a trial of the plan may ask themselves: Will our employes be organized from within or without? Will they be organized in the spirit of antagonism or cooperation? Judged in this manner the plan would seem to have much to commend it, but there is another element in the situation. It is the question whether labor will be satisfied with a fair recompense or whether it will seize the opportunities thus entrusted to it by this measure of self-government to force unjust terms on capital. Stable government must be based on the qualifications of the individual for governing himself. This plan may be an instrument for sound construction or an agency for destruction. The responsibility rests on labor; it has been conceded every point making for just decision in every problem that may arise. The big question is whether labor will keep the faith. Employers are bound to agree to practically everything labor may decide as being fair, the only check against unwarranted demands being that provided by arbitration. If there is any plan based on broader, more democratic principles, more generous to labor it has not been brought forward to date. Certainly, the promises of the so-called labor organizers do not hold out better and surer prospects for the future of the workingman. It is to the employes' best interests to accept the plan and enter into it in the same spirit with which it is being inaugurated by the employers; to turn their backs on the agitators and decide for themselves what their future shall be.

The employes' representation plan reflects the spirit of the times. Self-determination may usher in a glorious era among our own industries as among the peoples of the world. But it must not be forgotten that the success of every republic is founded on restraint. Let the meaning of that word sink into the breast of every man and there will be no more Bolshevism in labor but plenty of liberty of the kind that will make this land appear the land of opportunity which it, indeed, is for all men.

Better Coke Increases Production

IMPROVEMENT in the quality of coke is reflected in the very satisfactory showing of pig iron production for September. In these times when there is a great shortage of iron, especially the steelmaking grades, the enhanced output is most gratifying.

It is necessary, however, to strive for still better results. The peak of production has not been reached. This is partly due to the fact that there remains considerable room for further improvement in the quality of coke. Perhaps the most marked betterment during the past month that has been made was in the Connellsville producing district. The yard work is being done more carefully so that the coke is selected and loaded more painstakingly. The principal drawback in this, as well as other regions, is the lack of labor. If there were more laborers, many more beehive ovens could be blown in. A case in point is the many idle Frick beehive ovens in the Connellsville region, now that the Clairton by-product plant of the Carnegie Steel Co., is partly in operation.

The labor situation therefore is the essence of the problem of production. It would seem that the government, through its employment service, or some other branch, would do well to inaugurate an intensive campaign to recruit more coke laborers to insure that blast furnaces this winter will not be forced to undergo great losses of production due to a lack of fuel as they did last winter. It is vitally important that every furnace be kept going. But if there is to be a shortage of coke again this winter, government authorities may find themselves forced actually to put into effect what was discussed freely beginning last December and during the subsequent winter months when badly crippled ransportation, together with labor shortage at the ovens, cut down supplies of fuel at the furnaces. This discussion, it will be recalled, dealt with the feasibility of allocating coke to blast furnaces, supplying only those which are operated the most economically and require the smallest amount of fuel to make a ton of iron.

It is easy to imagine what a disturbance this would create in the industry, not only on the part of those whose furnaces would be rendered idle, but on the part of consumers whose supply of iron would be further restricted.

Labor should be recruited and coke output maintained at the maximum level. Tonnage both for current requirements and for as great stocks as can be accumulated should be turned out. The necessity of closing down some furnaces so that the most economically operated can be supplied with coke, it is hoped, will never come to pass. The fuel administration without doubt has the authority to do this very thing, but it could not do it wisely without advice from the steel division of the war industries board as to the latter's most pressing needs both for iron in tonnage and for particular grades.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 988

PIG IRON

Bessemer, valley	$35.20
Bessemer, Pittsburgh	36.60
Basic, Valley	33.00
Basic, Pittsburgh	34.40
Basic, del. Eastern Pa.	36.60
Basic, Buffalo, furnace	33.00
Malleable, Valley, del. Pittsburgh	35.90
Malleable, Chicago, furnace	34.50
Malleable, Buffalo, furnace	34.50

GOVERNMENT SCHEDULE

1.75 to 2.25 silicon (No. 2 foundry, No. 2 plain, and No. 3 southern), $34 furnace base.

2.25 to 2.75 silicon (No. 2X, No. 1 Northern foundry, and No. 2 southern), base plus $1.25.

2.75 to 3.25 silicon (No. IX), base plus $3.00.

Over 3.25 silicon, $37.00, plus $1.00 for each ½ per cent of silicon.

No. 1X, delivered Philadelphia	40.60
No. 2 foundry, Pittsburgh	35.40
No. 2 foundry, Cleveland furnace	34.00
No. 2 foundry, Ironton furnace	34.00
No. 1 foundry, Chicago furnace	35.25
No. 2 foundry, Chicago	34.00
No. 2X foundry, Phila.	38.85
No. 2X foundry, N. J. tide	39.05
No. 2X foundry, Buffalo furnace	35.25
No. 2 plain, Philadelphia	37.60
No. 2 plain, N. J. tide	37.80
No. 2 southern, Birmingham	35.25
No. 2 southern, Cincinnati	38.85
No. 2 southern, Chicago	40.25
No 2 southern, Phila.	41.85
No. 2 southern, Cleveland	40.25
No. 2 southern, Boston	42.75
No. 2 southern, St. Louis	39.50
Virginia, No. 2X, furnace	37.50 to 38.50
Virginia, No. 2X, Phila.	41.85
Virginia, No. 2X, Jersey City	42.75
Virginia, No. 2X, Boston	42.95
Gray Forge, Valley, del. Pittsburgh	34.40
Silveries, 8 per cent, furnace	47.50
Silveries, 8 per cent, Chicago	51.50
Low phos. standard, Phila.	57.00
Low phos, Lebanon, furnace	51.00 to 53.00
Low phos, Pittsburgh standard	54.40
Charcoal, Superior, Chicago	38.70 to 39.00
Charcoal, Superior, Buffalo	38.50
Charcoal, southern to 2 per cent silicon	51.00

COKE

(At the ovens)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	8.00
Wise county furnace	7.25
Wise county foundry	8.25

FERROALLOYS

Ferromanganese, 70 per cent delivered	250.00
Spiegel, 16 per cent fur., spot	75.00
Spiegel, contracts, furnace	75.00
Ferrocarbon, titanium, carloads, maker's plant	200.00
Ferrosilicon, 50 per cent, spot and contract, delivered	150.00 to 160.00
Bessemer ferrosilicon, 10 per cent	57.00
Bessemer ferrosilicon, 11 per cent	60.30
Bessemer ferrosilicon, 12 per cent	63.60

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

SEMIFINISHED MATERIAL

BILLETS AND BLOOMS

Open-hearth, Pittsburgh	$47.50
Open-hearth, Philadelphia	51.30
Open-hearth, Youngstown	47.50
Bessemer, Pittsburgh	47.50
Bessemer, Youngstown	47.50
Forging, Pittsburgh	60.00
Forging, Philadelphia	63.80

SHEET BARS

Open-hearth, Pittsburgh	$51.00
Open-hearth Youngstown	51.00
Bessemer, Pittsburgh	51.00
Bessemer, Youngstown	51.00

SLABS

Pittsburgh and Youngstown	$50.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$57.50
Grooved skelp, Pittsburgh	2.90c
Sheared skelp, Pittsburgh	3.25c

SHAPES, PLATES AND BARS

(In cents per pound)

Structural shapes, Pitts.	3.00c
Structural shapes, Phila.	3.23c
Structural shapes, N. Y.	3.245c
Structural shapes, Chgo.	3.27c
Tank plates, Chicago	3.52c
Tank plates, Pittsburgh	3.25c
Tank plates, Philadelphia	3.48c
Tank plates, New York	3.495c
Bars, soft steel, Pittsburgh	2.90c
Bars, soft steel, Chicago	3.17c
Bars, soft steel, New York	3.145c
Bars, soft steel, Phila.	3.13c
Bar iron, common, Phila.	3.73c
Bar iron, common, Chicago	3.50c
Bar iron, refined, Chicago	5.00c
Bar iron, common, Cleveland	3.67c
Bar iron, common, New York	3.745c
Bar iron, common, Pittsburgh	3.50c
Bar iron, refined, Pittsburgh	5.00c
Hard steel bars, Chicago	3.00c

RAILS, TRACK MATERIAL

Angle bars, Pittsburgh base	3.25c
Angle bars, Chicago base	3.25c
Standard bessemer rails, mill	$55.00
Stand. open-hearth rails, mill	57.00
Light rails, 25 to 45, mill	3.00c
Relaying rails, light, St. L.	60.00 to 67.00
Spikes, railroad, Pitts.	3.90c
Track bolts, Pittsburgh	4.90c
Track bolts, Chicago	5.115c
Tie plates, Chicago	3.25c

WIRE PRODUCTS

(Per 100 lbs. to jobbers; retailers 5c more)

Wire nails, Pittsburgh	$3.50
Coated nails, Pittsburgh	3.45
Plain wire, Pittsburgh	3.25
Galvanized wire, Pittsburgh	3.95
Polished staples, Pittsburgh	3.65
Galvanized staples, Pittsburgh	4.35
Barb wire, painted, Pitts.	3.65
Barb wire, galvanized, Pitts.	4.35
Cut nails, Pittsburgh	5.00

CHAIN, PILING, STRIP STEEL

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	7.50c
Sheet piling, base, Pitts.	4.00c to 5.00c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.50c.

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SHEETS

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c
No. 28, open-hearth, Chi.	5.27c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c

GALVANIZED

No. 28, open-hearth, Pitts.	6.25c
No. 28, bessemer, Pitts.	6.25c
No. 28, open-hearth, Chi.	6.52c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	4.25c
No. 10, bessemer, Pitts.	4.25c
No. 10, open-hearth, Chi.	4.52c
No. 10, open-hearth, Phila.	4.48c

TIN PLATE

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.75

IRON AND STEEL PIPE

Base Pittsburgh

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	51	37½
¾ to 3 in., butt, iron	33	17

BOILER TUBES

Steel, 3½ to 4½ inches, l. c. l.	30
Iron, 3½ to 4½ inches, c. l.	12½

CAST IRON WATER PIPE

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	69.80
Six-inch and over, Chicago	66.80
Four-inch, New York	70.70
Six-inch and over, N. Y.	67.70
Four-inch, Birmingham	63.00
Six-inch and over, Birmingham	60.00

HOOPS, BANDS, SHAFTING

Hoops, Pittsburgh	3.50c
Bands, Pittsburgh	3.50c
Hot rolled strip steel, Pitts.	3.50c
Hot rolled strip steel, Pitts. stamping quality	4.00c
Shafting, Pitts., carloads	17 off to list
Cotton ties, Oct., per bundle	$1.96

RIVETS

Structural rivets, Pittsburgh	4.40c
Boiler rivets, Pittsburgh	4.50c
Rivets 7/16 in. and small., Pitts.	50 and 10 off

NUTS AND BOLTS

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50-5 off
Cut thread	40-10-5 off
Larger and longer	40 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50-10-5 off
Cut thread	50-5 off
Larger and longer	40-10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60-10-10 off
Cold pressed semifinished hexagon nuts ⅝ in. and smaller	70-5 off
Gimlet and cone point lag screws	50-10 off

NUTS

Hot pressed, square blank	2.50c off
Hot pressed, square tapped	2.30c off
Hot pressed, hexagon blank	2.30c off
Hot pressed, hexagon tapped	2.10c off
Cold pressed, square blank	2.25c off
Cold pressed, square tapped	2.00c off
Cold pressed, hexagon blank	2.25c off
Cold pressed, hexagon tapped	2.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Quotation on leading products October 23, average for September, 1918, average for July, 1918, and average for October, 1917. Prices are those ruling in the largest percentage of sales at the dates named.

	Prices Oct. 23, 1918	Average prices Sept. 1918	July 1918	Oct. 1917
Bessemer pig iron, Pittsburgh	$ 36.60	$36.60	$36.60	$37.25
Basic pig iron, Pittsburgh	34.40	33.40	33.40	33.95
*No. 2 Foundry pig iron, Pittsburgh	35.40	34.40	34.40	33.95
*No. 2 Foundry pig iron, Chicago	34.00	33.00	33.00	33.00
Lake Superior charcoal, Chicago	38.70	37.70	37.50	37.50
Malleable, valley	34.50	34.90	34.90	35.20
Malleable, Chicago	34.50	33.50	33.50	33.50
**Southern, No. 2, Birmingham	35.25	33.50	33.50	33.00
*Southern Ohio No. 2, Ironton	34.00	33.00	33.00	33.00
Basic, eastern Pa.	36.60	32.00	32.00	33.00
**No. 2X Virginia, furnace	38.00	33.50	33.50	33.50
**No. 2X foundry, Philadelphia	38.85	34.50	34.50	34.25
Ferromanganese, 70%, delivered	250.00	250.00	250.00	285.00
Bessemer billets, Pittsburgh	47.50	47.50	47.50	58.75
Bessemer sheet bars, Pittsburgh	51.00	51.00	51.00	65.50
Open-hearth sheet bars, Pittsburgh	51.00	51.00	51.00	65.50
Open-hearth billets, Pittsburgh	47.50	47.50	47.50	58.75
Steel bars, Pittsburgh	2.90	2.90	2.90	2.90
Steel bars, Chicago	3.17	3.17	3.17	2.90
Iron bars, Philadelphia	3.73	3.73	3.73	4.935

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

	Prices Oct. 23, 1918	Average prices Sept. 1918	July 1918	Oct. 1917
Iron bars, Cleveland	$ 3.64	$ 3.64	$ 3.64	$ 4.50
Iron bars, Chicago mill	3.50	3.50	3.50	4.50
Beams, Chicago	3.27	3.27	3.27	3.00
Beams, Pittsburgh	3.00	3.00	3.00	3.00
Beams, Philadelphia	3.23	3.23	3.23	3.185
Tank plates, Pittsburgh	3.25	3.25	3.25	3.25
Tank plates, Chicago	3.52	3.52	3.52	3.25
Tank plates, Philadelphia	3.48	3.48	3.48	3.435
Sheets, blk., No. 28, Pittsburgh	5.00	5.00	5.00	7.75
Sheets, blue anld., No. 10, Pittsburgh	4.25	4.25	4.25	7.87
Sheets, galv., No. 28, Pittsburgh	6.25	6.25	6.25	8.81
Wire nails, Pittsburgh	3.50	3.50	3.50	3.87
Connellsville furnace coke	6.00	6.00	6.00	6.00
Connellsville foundry coke	7.00	7.00	7.00	6.00
Heavy melting steel, Pittsburgh	29.00	29.00	29.00	31.50
Heavy melting steel, eastern Pa.	28.50	28.50	28.50	26.00
Heavy melting steel, Chicago	29.00	29.00	29.00	27.00
No. 1 wrought, eastern Pa.	34.00	34.00	34.00	36.75
No. 1 wrought, Chicago	33.50	33.50	33.50	35.50
Rerolling rails, Chicago	34.00	34.00	34.00	36.00

(FOR ADDITIONAL PRICES SEE PAGE 988)

Place Heavy Iron Tonnage For 1919

Allocations For Next Year in Week Reach About 100,000 Tons—Virginia and Eastern Makers Selling More Freely to July—Negotiations Continue at Pittsburgh—40,000 Tons Placed For Makers of Semisteel Shells

Cleveland, Oct. 22.—Placing of large tonnages of various grades of pig iron for delivery in the first half of 1919 through the means of government allocation has come within the week. This has resulted in a heavy total being distributed, or 135,800 tons, which is the largest week from the standpoint of domestic use since the allocation plan was inaugurated. Foundries with contracts for semisteel shells now are being provided with round tonnages. A plant of this character in the Chicago district which is about to produce munitions on a large scale will receive about 40,000 tons of various grades as a result of the week's allocations. The week's distribution includes 31,500 tons of low phosphorus, of which 26,200 tons is for first half delivery; 31,200 tons of basic, of which 25,200 tons is for first half and included 21,000 tons for a northern Ohio steelmaker; 21,700 tons of bessemer, of which 17,000 tons will be delivered next year; 45,000 tons of foundry, including 21,000 tons for next year and 5500 tons of malleable, of which 900 tons is for delivery after Jan. 1. The total allocations since May 1 now stand at 1,363,600 tons. The indications are that the coming weeks will add considerably to this total, since requests for first half requirements are coming out briskly. Pig iron production generally is reported by furnace interests in this district to be considerably ahead of the record breaking rate of September.

First Half Selling Wave

New York, Oct. 21.—While pig iron makers, like practically all other iron and steel producers, believe that the war will and must be concluded only by unconditional surrender of the central European powers, the recent peace notes naturally have turned their minds to business after the war. It is believed that this trend is the foundation of a disposition to sell which at present is manifested in numerous quarters. Among actual sellers are the Virginia Iron, Coal & Coke Co., which is booking orders for delivery over the first half of next year. This interest, although selling in a limited way, at the same time is disposing of large tonnages in the aggregate. It is taking orders only from customers having a war or essential rating. Its form of contract provides that unfilled balances as of July 1, 1919, automatically will be cancelled. The prices to be paid will be the government prices prevailing at the time shipment is made, or in the event of the abrogation of government price fixing, the last government price that was in effect; provided, however, that this price is not above the cost of production, in which case the company will bill the iron at cost. If this cost price should not be satisfactory to the customer, the latter has the privilege of cancellation. A local seller has opened his books on Alabama foundry iron for first half and is prepared to take orders for this delivery from customers having a high essential footing, and who at the same time would be sure to need the iron even if the war were concluded. An eastern Pennsylvania maker is taking first half contracts for foundry with practically the same contract provisions as the leading Virginia maker. Another eastern Pennsylvania maker with a small output is accepting orders for foundry for November and December delivery. Numerous tonnages of foundry continue to be allocated mostly for delivery this year. In some cases these orders involve as much as 1000 tons. Only a few foundry orders so far have been allocated for first half of 1919, and these have been for delivery principally to navy yards. Numerous small tonnages of low-phosphorus iron continue to be allocated for first half delivery.

First Half Inquiries Received

Pittsburgh, Oct. 23.—Inquiries for pig iron, more especially the steelmaking grades, for delivery over the first half of 1919 continue to be made upon blast furnace interests in this

district. So far as can be learned, none of these inquiries has yet materialized into actual transactions, although it is admitted by some that the deals have advanced to the point of negotiation. Details as to the tonnages involved in these deals that are said to be pending are withheld. It is understood also that frequent inquiries are being made for off grades of iron to take the place of scrap which is extremely scarce. Although no opposition would probably develop on the part of the war industries board to sales direct from furnaces to consumers, comparatively few melters are inclined to assume the responsibility of the sales, since this sort of business means that the seller must be absolutely certain that the buyer is fully engaged on war work. Consequently, the bulk of the iron now moving is on allocations. During the past week a Cleveland consumer has been allocated 1500 tons of bessemer for delivery over the first quarter of 1919. More or less discussion is heard of peace and its probable effect on the iron market. One suggestion that has come out of such discussions has been that the war industries board be retained or a board having similar powers with regard to prices be formed and that instead of fixing maximum prices for the production of consumers, that it establish minimum quotations for three-month periods for the protection of producers during the transition from a war to a peace basis. As a basis for this suggestion, it is stated that peace might cause a sharp break in prices, and with the fixing of prices for certain periods there will be less disposition on the part of consumers to hold off for a decline.

Save For Urgent Needs

Buffalo, Oct. 21.—As the result of a rigid questionnaire sent by the government to consumers of pig iron, considerable tonnage is being salvaged for urgent war requirements. Consumers, being placed on their honor, are pointing the way to redistribution and a new application through which nonessential uses are being sidetracked for important work. In addition many consumers find on taking stock that they have overestimated their needs on certain lines. A good deal of iron is coming into war work in this way. Demand for iron for government purposes continues to increase and it is morally certain that requirements will be considerably in excess of production even if 100 per cent of output is applied to war work. Allocating steadily is increasing. The influenza epidemic is interfering with coal and coke production and one furnace man made the prediction that it may be necessary to bank in some instances if the supply does not improve. Little extra malleable iron may be looked for from this district under present indications, though the government is in urgent need. One furnace here strove to rearrange its malleable schedule and contracts but was unable to see its way clear to get out any increased volume. Very little extra low phosphorus ore is on hand.

Some Willing to Sell

Chicago, Oct. 22.—While the pig iron market continues quiet, disposition to sell is being evinced by some makers to a limited degree. The Virginia Iron, Coal & Coke Co. has announced that it will sell a limited tonnage for first half delivery to customers of the highest rating, engaged on essential war work. On this business cash in 10 days from date of invoice is asked and unfilled tonnages on books July 1, 1919 will be cancelled. It is also provided that if the government ceases to fix maximum prices at any time the last maximum price is to be paid for the remainder of the iron shipped on the contract. The buyer is given the privilege of cancelling at any time the price is unsatisfactory and the seller reserves the right to cancel if the fixed price is below the cost of production. Inasmuch as this iron must be sold on Birmingham basis it is not thought much will move in this direction, as the freight advantage is much greater on iron sold in the east. Some small orders, totalling about 4000 tons, for delivery in 1918, has been booked recently by Sloss-Sheffield, but the selling was not continued, as allocations were resumed and no more iron was available. More high sulphur iron is being offered, but melters are not taking it as freely as formerly. This iron is coming both from southern and northern stacks. A large foundry interest in this territory which is producing semisteel shells is to be supplied with a heavy tonnage of various grades by government allocation. This is in addition to recent purchases of bessemer iron made by this buyer direct.

Influenza Affects Output

Cincinnati, Oct. 21.—The output in the south has been held back to some extent on account of the influenza epidemic which has caused quite a shortage in labor. In southern Ohio some difficulty is also experienced in obtaining sufficient labor to man the furnaces. The trouble is said to be on the wane and no serious curtailment in the production of iron is feared. Selling is at a standstill. Prompt shipment business, covering sales of odd lots of offiron, is lighter than at any time this year. No standard grade metal is to be had. There seems to be a tendency on the part of some melters in the nonessential class, who have contracts ahead, to ask for cancellation of these contracts. However, this is by no means general, and probably represents a few consumers who believe it good policy to wipe the slate clean and start over again after present restrictions are removed. A small tonnage of Virginia iron is offered for this year's shipment, but melters are slow in taking it in, which illustrates the change in the situation from that of two weeks ago when every pound of iron offered was promptly bought.

Nonwar Buyers Inquiring

St. Louis, Oct. 19.—Furnaces in all directions are offering absolutely nothing in the way of pig iron in this market. The small tonnages of offiron placed by certain southern interests the week before apparently cleared up everything producers have to dispose of. A canvass of leading selling agencies here developed that none of the important furnaces will have anything to sell during the balance of this year. This is particularly true of basic makers. There is a possibility of small tonnages of foundry coming to the surface between this and Jan. 1, but the aggregate will be too small to affect the situation in any noticeable degree. It was stated by representatives of eastern and northern makers that even with their present intensive production they are unable to keep even with urgent war requirements. To date the peace talk and apparent nearness of the German collapse has failed to have the least effect on government demands, which are growing rather than falling off. Manufacturers of steel in this district have business in the prime classifications sufficient to keep them busy for several months to come. One effect of the peace rumors has been to stimulate inquiries from nonessential consumers. There is an enormous volume of latent business waiting to be executed the moment iron is released to go into it. Building, which has been virtually at a standstill for many weeks, is expected to revive the moment materials are available. Makers of specialties which are outside the essential category who have reduced operations to a minimum are ready to jump in and fill deferred orders just as soon as they can acquire raw and semi-finished materials. Mills and foundries working on government orders are still getting adequate supplies, but many of them have cut well into their reserves, and some apprehension is felt for the future.

Production Fails To Improve

Birmingham, Ala., Oct. 22.—Alabama furnace operations show no improvement, as has been hoped for and with additional troubles in the way of the influenza epidemic to disturb the raw material situation, there is no telling when an increased output can be expected. The Woodward, Tennessee, Sloss-Sheffield, Alabama and Republic companies each has at least one furnace that can be started up at once or in the very near future and the output is greatly needed but the uncertainty in raw materials makes it a gamble when to blow in. The yard stocks in this section are fast dwindling. Numerous inquiries are reported but so far as can be learned the bulk of new business is coming through government sources. It is announced in some cases that orders have been booked that will take up the probable make of iron for the first half of the coming year. The need for additional furnace operations is strong and the government as well as consumers are urging that everything possible be done to bring about greater production.

More Selling Being Done

Philadelphia, Oct. 22.—The leading feature of the pig iron market is the offering of first half foundry iron to A-1 consumers by leading Virginia producers. Sales so far run into many thousand tons. The interesting feature is that brokers who are doing this are receiving no commission but only 2 per cent discount where payment is made within 10 days after receipt of invoice. Some southern furnaces are willing to take on first half foundry iron for selected customers. One eastern Pennsyl-

vania furnace is taking first half foundry iron and another is selling some foundry for November-December shipment. Another Virginia furnace is selling some nearby foundry tonnage. Still another producer in the latter district is disposing of some off-foundry grades. A Virginia furnace now on spiegeleisen may go on foundry.

Valley Scarcity Continues

Youngstown, O., Oct. 23.—Pig iron is still scarce in this territory in spite of the fact that all furnaces are in operation except one, this being out for relining. A recent allotment consists of 2000 tons of Alabama foundry iron for the French government. Recently a maker here was confronted with a problem which turned out to be a costly one. Three cars of bessemer pig iron were billed to Washington for government use, but the railroad refused to move the iron on account of existing embargoes. Even the order direct from the government did not serve to satisfy the railroad officials and not until the maker got in touch with officials at Washington did the iron go forward. In the meantime, three days' demurrage was charged against the shipper which the latter had to pay.

Output Varies

In Tin Plate Due To Steel Supply—Influenza Affects

Pittsburgh, Oct. 22.—Makers of tin plate still wait official word with regard to requirements for dry food and other containers. It is understood that the government plans with regard to these requirements have been mapped out and will be promulgated shortly. Meanwhile, mill operations are uneven, some running practically full, while others are down to 70 per cent of capacity and some even below that mark. The explanation, since the government is allowing only sufficient steel for 70 per cent operations, is that some mills were shut down for one cause or another in the past six months and naturally accumulated a supply of steel during the idleness. These supplies and what is now coming forward permits of fuller operation of such plants than those that have merely the government allotment to work on. A good many of the mills feel the effects of the influenza epidemic, but only in a few cases is the loss of men sufficiently great to completely shut down the mills. At the current rate of operation, there are sufficient men, without those out for sickness, to keep up production to the fixed average.

Postpone A. S. M. E.

The midwestern meeting of the American Society of Mechanical Engineers, which was to have been held in Indianapolis Oct. 25 and 26, has been indefinitely postponed on account of the epidemic of Spanish influenza. It is understood that the meeting will be scheduled at a later date when health conditions become more normal.

Coke Production Drooping

Connellsville Region Fails to Do as Well in Coke as in Coal Output—Influenza Affects the South

Pittsburgh, Oct. 22.—Blast furnaces are getting enough, but no excess supply, of coke. The Connellsville region, upon which merchant stacks in this and the valley districts depend for the bulk of the coke supplies, continues to decline in the matter of production. This occasions some concern, although no furnaces as yet have been obliged to bank for want of fuel. It has been found a wise course, however, by not a few consumers to press the fuel administration constantly to keep coke moving to them, because there is much allocation of tonnages away from those who have contracts. The fuel administration is said to assume that those not making protest are amply provided. Coking coal production is reported to be seriously curtailed in central Pennsylvania and in West Virginia as result of the loss of men through the influenza epidemic, but as yet the western Pennsylvania regions have not suffered badly from the disease. Since saloons all over Pennsylvania were closed by the order of the state health commissioner, there is a disposition to credit the excellent coal record in the Connellsville district to the fact that it has been a "dry" zone. Blowing out of more of the beehive ovens of the Frick Coke Co. explains the failure of the region to do as well in coke, as in coal production. The coal which has gone to the Frick ovens is now going to the Clairton plant of the Carnegie Steel Co., and this has permitted of the blowing in of one additional battery of 64 ovens, eight now being in operation. The coke is being drawn at 22, instead of 18-hour intervals, however, and the actual gain in output, consequently, has been slight. Coke production in the Connellsville region for the week ended Oct. 12, was 322,920 tons, against 330,160 tons in the previous week, according to *The Connellsville Courier*.

Wise County Fuel Offered

Cincinnati, Oct. 21.—Some Wise county foundry coke can be had, both for shipment this year and on contracts for the first half of next year. Connellsville producers are slower in taking on future business although they are careful to see that their furnace customers are well taken care of. The output of coke has been reduced on account of the prevalence of influenza in nearly all districts. Had it not been for the extension of the draft age, thus forcing many laborers into essential industries, it is more than probable that oven operators would have had a hard time in getting sufficient help to keep fires lighted at the present time. As the situation now stands, according to reports from different districts, normal conditions should exist in a very short time.

Can't Accumulate Stock

St. Louis, Oct. 19.—Though leading melters are being adequately supplied with coke and no complaints are heard, to date there has been virtually no accumulation against needs the coming winter. Throughout this month the movement has been notably prompt, both through this gateway and on lines to the west and southwest. Once a consumer can get a car loaded and allotted to him, he is experiencing little difficulty in securing quick movement to destination. Another item of interest is a fair improvement in quality over recent weeks. Concerted complaint against the material shipped as foundry coke is bearing fruit, and there are promises of still further improvement. No dealer here, so far as can be learned, has any free coke to offer, though the volume of contracting for the first half of next year is quite heavy. Mines furnishing coal to the by-product plants in this district have been doing exceptionally well, permitting of capacity production by the leading interest and most of the smaller ovens.

Epidemic Retards Production

Birmingham, Ala., Oct. 22.—Production at coal mines in Alabama is being greatly interfered with by reason of the influenza epidemic and as a consequence, coke production is lagging. Judge H. C. Sellheimer, the production manager for the federal fuel administration in Alabama, looks for a very material falling off in the output for the week ending Oct. 19. In fact, it is believed that the poorest showing ever before made is to follow as there are so many mine employes laid up with the disease and in several instances mines are shut down entirely. The coke output in this district will be affected now for at least two to four weeks. Repairs to by-product coke ovens also is likely to affect the production of that grade.

Aid Jobbers

To Get Replacements On War Orders —To Receive A-6

Chicago, Oct. 22.—Warehouses, which have been practically unable to obtain shipment of steel for replacement of tonnage already delivered to their customers, probably will be placed in somewhat better position. They had been given a priority of B-4, which yielded them practically nothing from mills. It is understood that a circular will be issued shortly giving them a priority of A-6 on all material intended for replacement of steel sold for use by manufacturers holding A priorities. This will enable mills to give them considerable material and will provide an easy means for manufacturers to fill their requirements on essential work.

In the week ended Oct. 5 the American Locomotive Co. delivered 40 standardized locomotives, Baldwin Locomotive Works 15 and the Lima Locomotive Works nine.

Peace, Bear Scrap Factor

Sellers More Anxious to Fulfill Contracts—Offerings Increase in Some Districts—Some Grades Show More Softness

FOR COMPLETE SCRAP PRICES SEE PAGE 988

Pittsburgh, Oct. 22.—Trading in scrap is not free from the effects of peace talk. While prices are unchanged, with all grades holding close to, or at, government maximums, it is observed that buyers are a little less eager to take hold and there is more anxiety on the part of sellers to get their contracts out of the way. It seems to be a pretty general belief on both sides that peace will bring a considerably lower plane of quotations than now prevails and while the cessation of hostilities may be long ways off, the scrap trade is not one that will wait for actual peace before starting preparations for the new conditions. Another restraining influence on active buying is the fact that a large independent steel company is reported to have accumulated a stock of between 60,000 and 70,000 tons and other steel mills are said to be fairly well fixed against the winter's requirements. Scrap of all descriptions is scarce. There is not, it is now said, even a relatively good supply of shell turnings. Stories to the contrary probably had their origin in the fact that the mills making shell rounds were heavily engaged and it was assumed, no doubt, that this meant exceptional activity in the finishing shops. It seems, however, that much shell steel has gone abroad for forging and finishing. Cast scrap is extremely short and so little low phosphorus is available that users have asked the government to allocate supplies to them. There is such an undeniable shortage that there are some who cannot see peace as a probable cause of a serious break in prices. These interests point out that there will be no scrap available from the huge tonnages that have gone abroad in the shape of war supplies. It is admitted, however, that there may be recoveries from the battlefields that will cut off considerable export demand and thus partly balance the domestic loss.

Selling Movement Resumed

St. Louis, Oct. 19.—The selling movement among smaller scrap dealers was resumed in force this week. The apparent strides in the direction of peace have had an ultra-bearish effect on the psychology of collectors and yard men, among whom there is a clearly defined disposition to unload. The same is true of members of the trade in rural communities, as is evidenced by the brisk rate of shipments from the interior since Germany first mentioned a willingness to quit. While there have been no radical revisions in dealers' lists, the trend of prices is downward and a slump of broad proportions would doubtless ensue but for the great consumptive demand among both mills and foundries. These industries are absorbing the increased offerings rapidly, and sales this week have been extremely heavy in the aggregate. The demand for steel is particularly strong, the mills taking everything offered. Up to this time they have been willing to allow commissions. It is doubtful, however, if they will be paying commissions after this week, owing to the changed complexion of the market. Manufacturers have been purchasing scrap with enormous production programs in view, and a number of the leading interests have supplies accumulated sufficient to carry them through the winter. This fact is another bear factor in the scrap market. The principal car building interest has covered its requirements for some months ahead. Covering of short sales by certain of the larger scrap houses has aided in taking up the slack. Railroads are offering very little material.

Labor Restricts Offerings

New York, Oct. 21.—Trading in the New York scrap market continues to be limited only by the volume of material being offered, and that there isn't more scrap before the market is due largely to the labor situation at the yards. Many dealers report that more material is available than can be assorted and prepared. During the past couple of weeks this situation has been made worse by the epidemic of Spanish influenza. Owing to some legal question involved, it is understood that little of the 40,000 to 50,000 tons of scrap recently offered by the Pennsylvania railroad for delivery on contract over the next few months has been bought. Prices on all grades of classified material remain firm at the maximum levels set by the government.

Various Grades Are Scarce

Buffalo, Oct. 21.—Malleable and cast scrap are scarce in this district, and the demand far exceeds the supply. There is a pronounced shortage of strictly No. 1 heavy melting steel. The scrap labor situation is acute and has been intensified by the recent influenza epidemic.

Sales Show Decrease

Cleveland, Oct. 22.—Selling movements such as have been apparent in some other iron and steel scrap markets have not affected the market here at all. On the contrary, sales in this market have decreased somewhat. But the first real sign of peace will bring an avalanche of scrap out on the market, especially from scores of producers and dealers that have a carload or two of scrap hidden away, dealers claim. An enormous amount of scrap is moving at present—not on new transactions but on holdover contracts. Car service is excellent, and consumers, generally speaking, are taking all of the scrap that comes their way. Turnings are in as heavy demand as heavy melting steel, for which the open hearth plants seem to have an insatiable need. Some dealers are passing on a report that the government is to control the sale of all car wheels but better-informed dealers say they have not been able to buy any for more than a year, the railroads turning them in on new wheel orders.

Peace Talk Is Felt

Chicago, Oct. 22.—Indications are apparent in some spots that peace negotiations and the possibility of hostilities being brought to a close are having some effect on buyers. This situation does not obtain in relation to steel grades, as mills are in need of large tonnages and have not been disturbed by possibilities of the future. Foundry grades are somewhat softer, as melters hold off buying further supplies, but shortage of these grades is sufficient to hold the quotation steady up to this time. It is understood the embargo against shipment of steel into Ohio and the valleys will be raised as some consumers there have only sufficient scrap to keep them going from day to day. There is no excess of steel scrap in this territory, but some tonnage can be spared to assist those in worse position. The Rock Island offers 2000 tons in its current list.

Business Is Held Up

Cincinnati, Oct. 21.—The market seems to have struck a soft spot as far as future contracting is concerned. This applies equally as much to sellers as to buyers. Having no idea as to what the present peace talk will have on industry in general, there has been a holding off in transactions to await more definite developments. The foundries are melting as much scrap as usual and strange as it may seem, few of them have been handicapped to any extent by the influenza that has curtailed production in a number of other plants.

Scrap in Better Demand

Birmingham, Ala., Oct. 22.—Scrap contracts now being shipped against appear to be numerous and dealers say a better demand generally is noted. Yard stocks are being kept up despite assertions that labor is scarce, for assortment and other purposes, and that country scrap gatherers are asking for the highest government prices. Arrest of a number of junk dealers, practically scrap iron and steel dealers, on warrants alleging violation of federal statutes against buying, receiving or concealing railroad iron, brass, steel and other scrap, caused more or less consternation here last week. Heretofore, the claims of the railroads that they had been robbed of old material could not be sustained in court because of their inability to prove definite ownership. Local consumers of heavy melting steel, wrought iron and other products are buying freely.

Steel Supply is Sufficient

Philadelphia, Oct. 22.—Information now in the hands of the subcommittee on scrap of the American Iron and Steel institute shows that the supply of steel scrap is sufficient to insure steady operation of the steel mills during the winter. It may be necessary occasionally to have the mills

help each other out in the matter of supplies. The subcommittee has requested all open-hearth plants to send revised reports showing stocks on hand and requirements. The acute scarcity of heavy melting steel in central Ohio has been partially relieved by shipments made there from other districts. The latest reports show that cast scrap is very scarce and the subcommittee has many requests for help from users of this grade. The problem of finding enough cast scrap for users this winter promises to be difficult of solution. It will also be a problem to find enough wrought scrap to supply the need. The peace notes with Germany have made it easier to buy scrap. Country dealers in selling only what is in their hands as before, now are selling material before it reaches them.

No Steel

Continues to Appear in Open Market—British Buy Tonnage

Pittsburgh, Oct. 23.—Open market offering of billets, sheet bars, wire rods and slabs continue almost nil. This condition is due to the continued heavy run of ingots to mills rolling shell steel and rails. Extremely limited quantities of steel are being alloted for wire rods, production of which is just about sufficient to meet the essential requirements of the products of rods. Sheet mills are reported to be getting somewhat larger supplies of bars but this is merely in keeping with the fact that heavy allocations have lately been placed with the sheet makers. Non-self contained producers of strip steel report much difficulty in securing standard billets.

Sell Only to Consumers

Philadelphia, Oct. 22.—Eastern makers have received a recent request from the war industries board to sell semifinished steel only to consumers and then when the latter agree to resell only in the same form as received. The letter of the war industries board states that this request was made to prevent selling to middlemen, who would resell at higher than the government price.

British Place Orders

Youngstown, Oct. 23.—Good-sized tonnages of shell steel for the British government have been placed among valley mills during the past month. Mills are well booked with shell steel orders until the first of the year and right now all available steel is being used for munition purposes.

Steel Shortage Limits Output

Pittsburgh, Oct. 22.—Supply of steel for the cold rolled strip steel mills is being restricted to a quantity sufficient merely to meet the essential requirements of that product. Great difficulty is reported by makers in securing standard billets and because there is some waste and extra work in rolling larger sizes, some manufacturers report difficulty in keeping up the supply, even to the recent average.

Expect Sheet Cancellation

Since Government Needs Are Taking Practically All Tonnage, Mills Look For Automatic Abrogation When Peace Comes

Youngstown, O., Oct. 23.—No marked improvement in the sheet-bar supply is shown this week. Sheet mills continue to operate as best they can under prevailing conditions but the rate of operation probably does not exceed 60 per cent. All sheet mills of one large producer will be idle this week. Sheetmakers who depend on outside mills for their supply of bars have their regular monthly allotments and consequently operate their mills accordingly. Instead of operating all units irregularly, some makers consider it better practice to run as many mills steadily as their supply of sheet bars will permit. This plan is being closely followed at several valley mills. The government is still a heavy buyer of sheets among valley mills since this commodity has such a wide diversity of usage it is difficult to state exactly as for what purpose the government is using them. Several hundred tons of galvanized and black, however, are being exported to Europe for trench covers and cook stoves. Domestic buyers have made no effort to cancel contracts, most of them being satisfied to have their names on makers' books in hopes of obtaining tonnages after peace is declared. As matters stand now, however, sheets made by valley mills are practically all going to the government, none, as far as can be learned, reaching the domestic trade. In these times even jobbers are finding it hard to obtain even 50 per cent of their needs and are pleading for whatever they can get.

Makers have felt right along that the day peace is declared all sheet contracts made by the government automatically will be cancelled. The government contracts do not contain any clause bearing on this matter, but the opinion among valley sheetmakers generally is that this will be the case. Some makers are of the opinion that the government will make some provision for the sheets already rolled for it or in stock at the cessation of hostilities. In some cases the sheets now being rolled for the government are of a size seldom wanted by the domestic trade. Consequently for the maker to dispose of them, should the case arise, he would have to cut them to a size which would conform to other specifications. This of course would entail a loss on the maker's part. As a matter of conjecture the government may permit the maker to sell the odd-size sheets at whatever reasonable price he can get. If this price is lower than that stated in the original contract, then the government may allow the maker the difference.

Operations Gain Somewhat

Pittsburgh, Oct. 22.—Thanks to a slightly more generous supply of sheet bars, operations of the sheet mills have increased somewhat since a week ago. At the same time, new government requirements are pouring in on makers and the increased production lately attained in nowise improves the position of the jobbers and commercial users with regard to securing supplies. Like all other less essential steel products, current output of sheets, largely is absorbed by high priority orders. Influenza has not skipped the sheet mill workmen, but a full force of men is not required at the current rate of operation and the epidemic can not be offered as even as a remote cause for the moderate production.

Makes Sales in East

Philadelphia, Oct. 22.—Middle Western mills continue to offer sheets in eastern territory for delivery around six weeks. Some business is being closed. These mills are taking nothing but A orders.

Resume Cars

On Russian Orders Held Up Since 1917—Track Work Placed

Chicago, Oct. 22.—As another chapter in the experiences of the order for railroad cars for Russian railroads, which has had a tempestuous career, instructions have been issued to builders who were originally given this contract to proceed with the building of several thousand. This order was held up about the middle of 1917 and nothing has been done on these cars since that time, as conditions in Russia have been such that delivery and payment were uncertain. At that time much of the material for their construction had been shipped and was of such size and shape that it could not be used for other purposes in the meantime. The present order calls for as early delivery as possible, and inasmuch as practically all the material is in hand, their construction will be a matter of considerable speed.

Place Cars For Pershing

Philadelphia, Oct. 22.—Orders for the 40,000 freight cars for the American expeditionary forces recently bid upon have been awarded by the railway administration. The exact division of the order, however, has not yet been announced.

Rail Mills Busy

Pittsburgh, Oct. 22.—Standard rail mills in this district are heavily engaged on orders placed some time ago. No new orders have recently been booked. Forward bookings of light rails such as used in coal mine operations, are large and keep makers well engaged.

Portable Track Ordered

Cleveland, Oct. 22.—Further heavy orders for portable track for military use in France have been placed through the French commission. This represents a practical doubling of orders recently placed with a manufacturer in this district and with a large export company.

Bar Iron Lists a Puzzle

Western Makers to Confer With Eastern Mills to Interpret New Differentials—Steel Bar Plants Running Low

Chicago, Oct. 22.—Steel mills in this territory keep up their high rate of production and at present October promises to exceed September, which produced finished material at a higher rate than any month this year. New business and specifications during October to this date are practically double the same period in September. Peace talk seems to have had no effect on orders or specifications. Shell bars continue to be placed with mills, as contracts for machining are being taken by manufacturers. The new schedule of differentials on bar iron has produced some puzzlement among mill men here and interpretation is being sought. Since this announcement, business has practically stopped on the part of buyers and producers are wondering what its effect will be. Reduction of extras is regarded as a severe curtailment of possible profits and with small and large sizes classed as refined iron at 5.00c, regardless of its composition, it is thought that buying will be reduced to a minimum. Light is being sought on the situation and in the meantime selling is expected to be limited.

Western manufacturers of bar iron have conferred on the situation and will ask the Eastern Iron institute for a conference in order to get a clear understanding of what is meant by the announcement. If it seems necessary after this conference, the matter will be taken up with the American Iron and Steel institute. Hard steel bars rerolled from rails are being sold only in occasional carloads to the regular trade, no more business being booked than can be turned out from the small supply of old rails which is available.

Bar Iron Scarce

Philadelphia, Oct. 22.—Demand for iron bars by reason of the steel bar scarcity has grown so active that the mills have business enough for three months on hand and rarely are shipping anything later than A certificates. This contrasts sharply with three months ago when it had not yet become necessary to apply priorities sweepingly on bar iron. The Hog island shipyard recently placed several thousand tons additional of rivets which will be sufficient to cover requirements until February.

Falling Behind Orders

Pittsburgh, Oct. 22.—Supply of billets available for the mills rolling hoops and bands is extremely limited. Indeed, allotments of steel to this class of mills are so light that makers cannot keep up with the orders they have on their books.

Steel Shortage Cuts Output

Pittsburgh, Oct. 22.—Output of the merchant steel bar mills is even lighter than it was a week ago. Few mills are now being operated at more than 50 per cent of capacity, and at some plants some of the bar mills actually are shut down. Heavy demand for crude steel for rails and shells leave little available for the bar mills, and because the steel that goes to those finishing mills is high in carbon, the discards are of little use in making bars except for reinforcing purposes. Strong demand exists for iron bars.

Running About 50 Per Cent

Pittsburgh, Oct. 22.—Current operations of cold rolled shafting mills are about 50 per cent of capacity. No more steel is being allowed for this purpose than is needed to fill essential orders.

Bar Iron Orders Placed

Youngstown, O., Oct. 23.—Fair sized governmental orders for bar iron have been distributed among makers here, one maker having taken on approximately 2000 tons. The Santa Fe railroad which operates a small bar mill in Corwith, Ill., is in a position to sell each month its excess rolling of bars. It is said the quantity of iron bars available for the trade from this source each month averages nearly 200 tons, the sale price being anywhere from 3c to 3.50c, mill.

Specify Bolts Heavily

Chicago, Oct. 22.—Heavy specifications are being received by makers of bolts and nuts to apply on existing contracts. New business is being taken by bolt makers only in such cases as small lots are desired, which will fit in without disarranging the schedule. Demand by the government for war use is steady, mostly in small orders and these are cared for ahead of all other obligations.

Busy On Government Work

Pittsburgh, Oct. 22.—Government work continues to absorb practically the entire output of nuts, bolts and rivets. Makers are not running full capacity, for in spite of the character of their orders, the allotment of steel is not as heavy as could be desired and lack of sufficient labor also is a restrictive influence. Commercial demands are moderate.

Ferrosilicon Inquiry Big

Steel Corporation Wants 25,000 Tons—Bethlehem Seeks 8000 Tons—Output of Ferromanganese and Spiegel is Ample

New York, Oct. 21.—Some makers of 50 per cent ferrosilicon are quoting prices for next year as follows: Contracts over the 12 months beginning Jan. 1, $152.50; over the first half, $155; and over the first quarter, $157.50. These prices are based on shipments in bulk and include the absorption of freight to the extent of $3.50 a ton. On long hauls, sales will be made f.o.b. producers' plants. The United States Steel Corp.'s inquiry for about 25,000 tons of 50 per cent ferrosilicon remains open. Other inquiries still before the trade include 2500 to 3000 tons for the Youngstown Sheet & Tube Co.; 60 to 75 tons monthly over the first six months of 1919, for the Andrews Steel Co., Newport, Ky.; and about 8000 tons for the Bethlehem Steel Co.

Numerous reports have been circulated of late to the effect that certain makers of ferromanganese have been ordered to switch their furnaces to the production of pig iron. On carefully checking up these rumors with the furnaces involved, it develops that they are without foundation. So far as can be learned, no furnaces have received any instructions or requests to discontinue the manufacture of ferromanganese and go on pig iron. At the same time, it is not improbable that the shifting of capacity in this manner may be done voluntarily at one or two furnaces in the near future, since talk of this character has had its effect in directing the attention of the manufacturers of ferromanganese to the fact that there is a tendency toward an overproduction of this metal.

Sales of ferromanganese and spiegelcisen during the past week have been numerous for spot shipment but none represented a considerable tonnage. Although the tendency in ferromanganese is rather easy, disposition to shade the quoted price is not marked, due probably to the fact that the market is not being tested by any large inquiries. Spot sales continue to be made on the basis of $250, delivered, for 70 per cent metal. Sales of spot spiegeleisen continue to be made at $75, furnace.

Furnaces Can't Get Fuel

Philadelphia, Oct. 22.—In some cases furnaces have been unable to make arrangements at Washington for fuel to produce ferromanganese and spiegeleisen, due to the plentiful supply of these metals. It is likely therefore that these furnaces will switch over to pig iron if they can obtain fuel for the latter production.

No Improvement In Business

Pittsburgh, Oct. 23.—Ferroalloys trading continues inactive in this market both as regards inquiries and actual sales. It has been some time since sellers have received any inquiries for 70 per cent ferromanganese and sales of 16 to 18 per cent spiegeleison have been entirely in small lots. The Youngstown Sheet & Tube Co. which has been in the market for between 2500 and 3000 tons of 50 per cent ferrosilicon for delivery during all of next year, is understood to have withdrawn this inquiry and now proposes to merely cover its requirements for the first quarter of 1919. Dulness in this and other ferroalloys is ascribed in some quarters to persistent peace talk during the past few weeks. It is a well-known fact that consumers are well covered for the remainder of

this year and are believed to be fairly well supplied over the first part of 1919 on ferromanganese and the lower grades of ferrosilicon.

Little Interest At Chicago

Chicago, Oct. 22.—Consumers of ferromanganese and spiegeleisen are not showing much interest in the market which is comparatively inactive. This situation is regarded as temporary and buying for first half of 1919 is expected to be resumed shortly.

Ask Lower Differential

Youngstown, O., Oct. 22.—Iron and steel shippers here are seeking to have the railroad administration rescind the order increasing the freight differential to 3½ cents per 100 pounds, on east-bound freight between Youngstown and Pittsburgh, effective Nov. 1. Restoration of the two-cent rate is sought. A subcommittee of American Iron and Steel institute has taken up the question, in view of the fact that the differential on west-bound freight between the two cities was eliminated some time ago. Although there is said to be a possibility of some modification it is believed a high rate will continue until the end of the war.

Iron and steel makers are not at all pleased with the sharp advance as it affects a large tonnage with virtully all output now going east. Traffic officials here also have information that the railroad administration has requested all individual lines or joint agents to eliminate all exceptions to class rates so far as possible, thereby subjecting heavy shipments from many points to the higher class rate.

Barbed Wire Orders Huge

About 150,000 Tons Now Being Distributed—Leading Makers to Receive 150,000 Tons For France—Jobbers in Trouble

Pittsburgh, Oct. 22.—Allocations of military barbed wire involving 150,000 tons and possibly more, are about ready for distribution. The government has already conveyed the information to the various manufacturers here with regard to the quantities which each will be expected to produce and apparently all that remains to complete the transaction is acceptance on the part of the mills. This order means that there will be little, if any, barbed wire for regular commercial uses much before next summer. One maker reports that between orders now booked and the allotment in the new distribution, that it will be June or July before there will be any supply available for other demands. Marked scarcity of nails still is noted and jobbers' orders even for replacements of supplies shipped on direct or indirect government work are getting but scant attention. A good many high priority orders are coming for nails, and because of the limited tonnage of steel available for wire and wire products, only a small fraction of the jobbers' needs can be met. Much annoyance is observed on the part of the latter by reason of their failure to get supplies, but no immediate relief is in sight in view of the light steel supply, on the one hand, and heavy direct government orders, on the other. One independent concern in this district states that its government orders are sufficient to take every pound it will produce during the next 30 days. This company has heavy priority orders for nails and a big order for plain wire placed some weeks ago; it also shared in an allocation of barbed wire and wire rods for export made a month or so ago. Beside it is being called upon to divert considerable tonnage of ingots for shell rounds. It is offering limited quantities of coated nails made from odd runnings of wire. No value whatever exists for B-4 priority ratings in the matter of wire and wire product supplies and jobbers who have essential government orders are urged to take advantage of section 7, of circular No. 4 of the war industries board which will enable them to get a better rating.

Allocate 65,000 Tons

New York, Oct. 21.—Orders for 65,000 tons of barbed wire have been allocated to the leading makers for shipment to France. This business is not yet definitely settled, however, since it must be confirmed by orders from the French war mission in Washington. Other wire and wire products allocations during the past week have not involved a great deal of tonnage.

May Close

Pipe Foundries In East In Favor of South—Orders Light

New York, Oct. 21.—Trading in the eastern cast iron pipe market during the past week has been somewhat slower. While the lull generally is regarded as purely seasonal, some interests have interpreted it as presaging action on the part of the government to close down foundries in the northeast section during the next few weeks, a possibility suggested at the recent meeting in Washington between cast iron pipe manufacturers and federal officials to discuss conservation measures. At that time it was stated that these foundries might have to clean up orders and cease operating by the first of the year, in which event the shops located in the south, where there are fewer steel mills, would be left to handle the bulk of new business. However, nothing definite has developed so far. At the same time the government continues to place orders with eastern makers who are booked up anywhere from two to three months.

Akron Job Pending

Chicago, Oct. 22.—With practically no business being received from usual sources, cast iron pipe shops are dependent almost entirely on government orders to keep up their tonnage. The United States Cast Iron Pipe & Foundry Co. has taken 400 tons of 36-inch pipe for an intake at the naval training station at Great Lakes, Ill. Bids have been opened at Akron, O., on 5750 tons but no award has been made.

May Cancel Ship Plates

Makers Disconcerted By New Clause Put Out by Shipping Board Permitting Abrogation Readily—Some Cancellations Made

Philadelphia, Oct. 22.—Eastern plate makers are much disconcerted by a cancellation clause which appeared in orders placed by the shipping board during the past week. This provides that the board may cancel orders whenever it is to the country's interests to do so. This provision manifestly is not applicable to contracts previously placed. Developments of a similar character during the past week include the cancellation by a shipbuilding company of a tonnage of steel to be used in shipyard extensions and the cancellation of a tonnage for the construction of a marine boiler plant at Maurer, N. J.

Plates for 1500 locomotives for the American expeditionary forces to be built by the Baldwin Locomotive Works have been allocated. Of this lot, 650 tons each will be supplied by the Midvale and Lukens companies, and 200 tons by the Central Iron & Steel Co. Each locomotive will require 20 tons. Operations which at most eastern plate mills went below 50 per cent by reason of the influenza epidemic, now are over 60 per cent. The 204-inch mill of the Lukens Steel Co. now is operating regularly at part capacity.

Production Still Heavy

Pittsburgh, Oct. 22.—Plate mills still are heavily engaged in providing the needs for ships and cars. Distribution of the order for 40,000 cars for France has not yet been made, although some official word is expected shortly. Present bookings of the car builders are probably in excess of 100,000. It has been reported that in addition to the 40,000 cars which are to be allocated for shipment to France, that the government is considering another order for 100,000 cars for use on the domestic railroads. This allotment, however, is merely under consideration and some time likely will elapse before there is any announcement concerning it. Such an order would call for about 1,500,000 tons of steel, exclusive of the iron required for the wheels.

Weigh After-War Outlook

Leading Structural Interests Not Sanguine on Prospects After Peace—Ship Contracts to Continue—Lettings Gain

New York, Oct. 21.—In view of the fact that many iron and steel companies are beginning seriously to consider the readjustments that necessarily will be made at the conclusion of the war, the structural trade received with considerable satisfaction the announcement of Charles Piez of the Emergency Fleet corporation last week that all ships now under contract for the government, positively are to be completed. Mr. Piez estimated that the building of these vessels would occupy shipyards until the end of 1919. A canvass of the structural and bridge shops shows that these interests are making rapid progress in fabracating steel for government vessels. Most fabricators expect to have all of their contracts for ship steel completed early next year and practically all of them expect to have all of this tonnage worked up no later than June, 1919. In view of the extent to which peace talk has turned the minds of the industry upon what will happen when the war is concluded, it is of interest to note that one leading fabricator is inclined to expect a very dull period in the structural field after the war. This fabricator believes that habits of thrift have been fastened upon us as a nation and will continue to be necessitated by conditions for a long time to come. He believes that a large percentage of the structural projects which were halted by the war conditions will not be revived immediately after the conclusion of peace.

Practically all projects which came up during the past week were in connection with extensions to plants engaged on war materials. The trade is greatly interested in information that the navy department in the course of three or four weeks will ask for bids on the construction of buildings to form a part of what ultimately is to be the armor plate plant of the navy department at Charleston, W. Va. Owing to the length of time that would be required to fit this plant for making armor plate, it is believed to be the intention of the navy department to fit it, at least temporarily, for the manufacture of ordnance and shells.

Reports compiled by the bridge builders and structural society show that 60 per cent of the total capacity of the bridge and structural shops of the country was contracted for during September. This is equivalent to 108,000 tons, a gain of 6000 tons as compared with August, and a loss of 101,700 tons as compared with July. Comparative figures follow:

Month	Per cent	Approx. tonnage
September, 1918	60	108,000
August	57	102,000
July	116½	209,700
June	56	100,800
May	60	108,000
April	64	115,200
March	47	84,600
February	55	99,900
January	53	95,400
December, 1917	121	205,200
November	77	138,600
October	61½	110,700
September	29	52,200
August	38	68,400
July	41½	74,700
June	47½	85,500
May	56½	102,000
April	61	110,000
March	68	122,000
February	59	106,000
January	61½	119,000
December, 1916	86	148,000
November	78	134,000
October	77	133,500
September	52½	99,400
August	64	112,600
July	47½	83,600
June	58	100,000
May	80	137,000

Ship Only A Orders

Philadelphia, Oct. 22.—Eastern shape mills continue to ship material only on A priorities although they are booking new business for indefinite future shipment. Shapes used in shipbuilding are sold up for three or four months ahead, while other forms are available for early delivery. Lettings continue small.

Some Falling In Steel Supply

Pittsburgh, Oct. 22.—Operations of fabricating shops have been curtailed to some extent lately for want of steel on the one hand and because of lack of labor, on the other, due to the prevalence of influenza. It is reported that the fabricating shop of the McClintic Marshall Co. at Rankin, Pa., had 150 out of the 650 men employed there, on the sick list recently. No new structural lettings of any importance have lately been announced. Current activities continue entirely on the wants of the Emergency Fleet corporation and other essential government construction.

Military Requirements Heavy

Cleveland, Oct. 22.—Heavy steel requirements continue in sight for large orders for motor trucks and tanks for military service, a considerable portion of which have been placed with builders in this district. Quick delivery on steel for many tanks is being arranged for. Several thousand tons of alloy steel have been placed for parts for army trucks and more is to follow. A Pittsburgh mill will supply 2200 tons of plates to the American Shipbuilding Co. under an allocation just made.

Navy Buys Bridge

Chicago, Oct. 22.—Letting of contracts involving structural shapes continues under the ban, except for war purposes. The American Bridge Co. has taken 178 tons for a bascule bridge for the causeway at the Mare Island navy yard. The Blackhawk Coal Co., Salt Lake, a subsidiary of the United States Smelting, Refining & Mining Co., has placed 100 mine cars, involving 120 tons of steel, with an eastern manufacturer.

CONTRACTS AWARDED

Signal bridges for Pennsylvania railroad, 100 tons, to Eastern Steel Co.

New bag and packhouse for Lehigh Portland Cement Co., Oglesby, Ill., 150 tons to Worden-Allen Co., Milwaukee.

Strauss bascule span for causeway at Mare Island, Cal., for the United States government, 178 tons, to American Bridge Co.

Shop building for Holt Mfg. Co., East Peoria, Ill., 370 tons to the Clinton Bridge & Iron Works.

Bridge at Philadelphia for Pennsylvania railroad, 400 tons to American Bridge Co.

CONTRACTS PENDING

Inspection shed for public service commission of New York, 148th street, New York, 150 tons, bids being taken.

Storehouse building for government at Washington, 500 tons, bids being taken.

Shop building for Pennsylvania railroad, Altoona, Pa., 100 tons, bids being taken.

Building for Locomotive Superheater Co., East Chicago, Ill., 300 tons, bids being taken.

Building for Western Cartridge Co., East Alton, Ill., 700 tons, bids being taken by army construction division.

Reconstruction of machine shop, foundry and other buildings at Boston navy yard, 1800 tons, bids being taken.

By-Product Plants

Are Contracted For at Cleveland and at Fairmont, W. Va.

Contracts for 120 coke ovens to cost approximately $6,000,000 have been let by the Domestic Coke Corp., Cleveland, for plants at Cleveland and Fairmont, W. Va. It is one of the largest of the recent war-time enterprises, the government financing the plant at Fairmont and the corporation itself financing the Cleveland plant, having contracts with the government for supplying it all the toluol and ammonia sulphate produced at the two plants.

The corporation has let a contract to the H. Koppers Co., Pittsburgh, for 60 ovens to be installed at the Fairmont plant. The contract price was $3,000,000 and the ovens are to be ready for operation within 13 months. The corporation has a 45-acre tract at Fairmont and work is now well under way. The plant is to consume 1700 tons of coal per day, producing 450 gallons of toluol and 13½ tons of ammonia sulphate.

For its Cleveland plant, the corporation has let a contract to the Semet-Solvay Co., Syracuse, N. Y., for 60 by-product coke ovens to be ready for operation within 13 months and having substantially the same capacity as the Fairmount plants. The Cleveland plant is to be located in the Newburgh manufacturing district and while the government will take all the residues the coke will feed surrounding plants and the gas is to go to local domestic and industrial consumers.

The Domestic Coke Corp., is capitalized at $5,000,000, of which $2,000,000 has been issued. It will own the Cleveland plant in its entirety and has an option from the government for acquiring full ownership of the Fairmont plant at the end of the war. Frank H. Ginn, of the law firm, Tolles, Hogsett, Ginn and Morley, Cleveland, is president; Charles V. Critchfield, for six years gas engineer for the Ohio public utilities commission, who resigned to aid in developing the enterprise, is vice president and treasurer and Roger Hyatt is secretary.

New Corporation Plants for Duluth

Lake City Drops Agitation to be Made Steel Basing Point on Agreement With Steel Corporation to Build Wire, Tin Plate and Sheet Mills —Winter Ore Operations Will Be Extensive

(Special Correspondence)

Duluth, Oct. 21.—As the result of a conference between Charles P. Craig and Francis W. Sullivan, members of the Duluth committee, and participated in by A. M. Marshall and Julius H. Barnes of Duluth and Judge Elbert H. Gary and other officials of the United States Steel Corp. at New York, a settlement has been reached in the long drawn steel basing point contention in which this city was interested. When submitted to other members of the committee by Mr. Craig on his return, the settlement was regarded as fair in every respect and received their unqualified approval. In consideration of the abandonment by Duluth of the Pittsburgh plus freight agitation, Judge Gary for the Steel corporation has entered into an agreement to establish in Duluth at the conclusion of the war, four plants for the manufacturing of finished steel products, including wire, nails, tin plate and sheets. On the basis of costs before the war, the establishment of these industries would involve capital outlays of from $8,000,000 to $11,000,000 or approximately $18,000,000 at present prices of materials and labor. It is proposed to make the plants of sufficient capacity to take care of the market in the northwest for the several lines.

Co-operation between the city of Duluth and the United States Steel Corp. is assured under the agreement, and should it subsequently be found necessary to abolish the Pittsburgh plus freight base and substitute other revisions in the price of products arrangements in order to manufacture profitably at this point, the Steel corporation will attend to that detail. Duluth will benefit in an industrial way in any changes that may be made.

An immediate development of the settlement of the basic steel price disput has come about in the purchase by the Marshall-Wells Co. of the old Atlas plant, consisting of 10 acres of land and two large brick structures, in which it is proposed to take up the fabrication of a varied line of steel products. This plant was erected during the boom period of 25 years ago. The original promoters failed and the plant has since lain idle.

Activity is the order in steel and iron manufacturing circles at this point. The Minnesota Steel Co.'s plant is engaged upon a heavy contract with the war department for semifinished steel that is taking up almost the entire capacity of its furnaces. The Zenith Furnace Co. and the Clyde Iron Works also are engaged upon war contracts and in the aggregate larger working forces are being employed than ever before in the history of the trade at this point. In the shipbuilding line, the McDougall Duluth Co. is employing a force of nearly 3500 men and is still further increasing the capacity of its plant.

Ore Season Nears End

Shipments by lake of iron ore from the Lake Superior district for the present season are expected to aggregate about 60,000,000 tons, as compared with 62,499,000 tons last year. The movement of ore from here down the lakes has been maintained in better volume than the majority had counted upon and experts in the trade expressed surprise that the tonnage from the Minnesota ranges up till Sept. 30 should have shown an increase of around 900,000 tons with the total reported at 34,769,632 tons. It is conceded that shipments from the docks from now on to the end of the season will fall off and what the tonnage will finally reach will depend altogether upon the weather and supplies situation at the Lake Erie docks. Some of the independent operators will finish up their season's shipments by Nov. 1 and it is now on the cards for the Oliver Iron Mining Co. to shut down the movement of ore from the majority of its properties by Nov. 15. Last year ore was loaded out from the docks at Duluth and Allouez bay as late as Dec. 9 so with the earlier closing a falling off of around 3,500,000 tons in the aggregate amount moved is thought to be a conservative estimate.

In connection with the proposal to close down work upon the smaller mining properties and concentrate energies upon the larger and low cost mines, a committee headed by J. H. McLean, manager of the Oliver Iron Mining Co., is at work. A comprehensive operating plan along the lines mentioned is expected to be formulated shortly.

The labor situation at the mines has been on the ragged edge all season and at times operators have experienced difficulty in maintaining their crews. The military drafts resulted in the taking of the younger and more vigorous men from the mining locations, leaving operators dependent upon the older element and foreigners, including a larger proportion of Finns, than mine superintendents would have desired in their gangs. On top of the deterioration in labor, operators have been confronted by a disposition on the part of the men to take considerable off-time, and there has been more migrating on the part of miners from mine to mine than in other seasons. The rate of pay for miners has averaged up at around $6 a day, as compared with $3.50 two and three years ago, and in place of promoting efficiency that high scale of wages has worked out in the way of leading a certain class of labor to put in only sufficient days a month to cover their costs of living and leave a moderate margin over. In desperation some of the mine operators at times strongly debated the possibility of General Crowders' work-or-fight order being made applicable to that class of men. As it is now mine operators agree that they can keep going fairly satisfactorily provided they are not further interfered with by the military draft boards, and they are in hopes that in view of the essential nature of the industry, miners will be exempted during the next few months.

Much Winter Development Planned

Stockpiling and development work will be on an extended scale at the leading properties during the winter months, with a view to substantial ore tonnages being available to move at the opening of the 1919 season. Improvements in the way of new headframes, hoisting and handling machinery, etc., are being carried through at several mines on the Minnesota ranges including those of the Oliver Iron Mining Co., M. A. Hanna & Co., the Republic Iron & Steel Co., and the Tod-Stambaugh Co. An official of the Oliver Iron Mining Co. asserted that a good proportion of its force of 14,000 miners will be employed in operations during the winter months.

Prompted by the urgent demand for manganiferous ores the Cuyuna range has set the pace during the present season in the way of development work. Manganiferous ore shipments from that range for the season are expected to aggregate 700,000 tons as compared with 225,000 tons last year. One-half of that tonnage will be handled by the American Manganese Mfg. Co., made up of the outputs of the Cuyuna Mille Lacs and Cuyuna-Duluth mines and ores purchased from other operators. E. E. Marshall of Philadelphia, president of the American Manganese Mfg. Co., was a recent visitor to the range. He expressed himself optimistically regarding the outlook for the development of manganiferous ore deposits upon the Cuyuna range and predicted that a number of additional properties will become shippers during the 1919 season.

Goes to Artillery Camp

Amasa Stone Mather, of Pickands, Mather & Co., Cleveland, has left for Camp Taylor, near Louisville, Ky., for artillery training. Mr. Mather is a director of the Youngstown Sheet & Tube Co., Youngstown, O., and also is secretary of the subcommittee on pig iron, iron ore and lake transportation of the American Iron and Steel institute.

What Peace Means to War Contracts

Mixed Situation Apparently Would Develop in Iron and Steel Products—Ordnance Orders Provide For Adjustment—Drastic Clause Just Inserted in Ship Steel Contracts Permits Summary Wiping off of Tonnage

WHAT effect would the negotiation of peace have on war contracts? This question now is being raised on all sides because the conclusion of hostilities, whether now or months hence, has been brought within the range of definite probability by the growing signs of Germany's acceptance of defeat.

A carful survey of the situation discloses a complacent attitude among producers of iron and steel and affiliated lines over the degree of that any readjustment forced by an armistice and subsequently by the signing of terms of peace would bring. Proper safeguards apparently have been provided to meet such a contingency.

It is shown that much of the present production of war requirements is based upon firm contracts which are not subject to cancellation. This notably is the case with all contracts placed by the navy and by the Emergency Fleet corporation. Supplementing this fact is the statement made this week by General Manager Charles Piez of the shipping board that all vessels now under contract will be carried out regardless of the ending of the war, insuring full employment of the shipyards to the end of 1919 at least. That the federal shipping authorities, however, are more seriously weighing after-war factors is shown by the fact that new orders for ship steel now carry a clause permitting cancellation whenever it is to the interest of the country to do so.

The situation with contracts negotiated by the war department is somewhat varied. Some of these are not open to modification or cancellation. Those placed by the ordnance department, however, carry a termination clause providing equitable payment for all materials manufactured or ordered. In this connection the contracts by the government with the Steel corporation and the Midvale Steel & Ordnance Corp. covering the building of big gun plants at Neville island and Philadelphia provide proper indemnification for all expenditures for construction and operation and a certain profit in the event of cancellation.

Purchases by the allies generally in this country are by firm contracts. It is very probable, according to well-informed steel officials that should peace ensue, the allied governments would endeavor to change over undelivered war steel to commercial tonnage. The British shell steel contracts in fact provide for the substitution of unfilled tonnage by an equivalent quantity of any finished material or assortment of products that may be agreed upon mutually between the buyer and the seller. The French shell steel contracts are without any clause bearing upon the conclusion of peace, but for finished material carry certain stipulations.

Some War Orders May Be Adjusted

WASHINGTON, Oct. 22.—While government officials are deprecating any talk of peace of which there does not appear to be any definite prospect in the near future, some thought has been given in various quarters to the effect that the end of hostilities would have on war contracts for iron and steel.

According to an inquiry made by THE IRON TRADE REVIEW, the contracts placed by the navy and the Emergency Fleet corporation carry no provision which would be put into motion by the conclusion of the war. Apparently, therefore, these contracts would be considered on a permanent basis regardless of the establishment of peace.

Contracts with the war department for ordnance material, however, carry a termination clause which would be applied in the event of peace. This clause stipulates that upon notification of the contractor by the chief of the ordnance department such material as has been manufactured up to that time shall be paid for at the contract prices. Such materials as have been ordered by the manufacturer and are on hand are to be paid for "on a fair and equitable basis" by adjustment with the war department.

Iron Makers Provide for End of Price Fixing

Pig iron producers generally have made provisions in their contracts covering any cessation of government supervision over prices which may come with the conclusion of peace or subsequently. Leading middle western producers have inserted a clause in their contracts which provides that in the event government price regulation shall cease the last government price fixed shall apply on the undelivered tonnage. Other prominent interests in the same territory have a clause which provides that the price at which the contract originally was entered into shall rule on undelivered portions at the end of government regulation. Furnaces in different parts of the country have handled the question in a somewhat similar way. It is pointed out that some sort of a provision has been rendered imperative for the protection of the furnaces against their coke and ore obligations since in the contracts for the latter similar provision has been made for the application of the original contract price or of the last government fixed price. A leading Virginia iron producer has a form of contract which provides that

the government prices prevailing at the time shipment is made shall apply to unfilled balances, providing, however, that this price is not above the cost of production, in which case the company will bill the iron at cost. If this cost price should not be satisfactory to the customer the latter shall have the privilege of cancellation.

Drastic Cancellation to Cover Ship Steel

Philadelphia, Oct. 22.—Ordnance contracts placed by the army during the past several months contain a cancellation clause but this is not as drastic as that just inserted in contracts for ship steel placed by the shipping board which permits the abrogation of the orders whenever it is to the country's interest to do so. The ordnance contracts state that they are necessitated by war and provide for a cancellation under fair and equitable terms in the event of the termination or limitation of war or if the methods of waging of war render the material obsolete. Material manufactured at the time notice of cancellation is given and for 30 days thereafter will be accepted and paid for by the government. The later also will pay for component parts on hand and will compensate for labor and material. The French contracts for shell wire and barbed wire contain a similar cancellation provision.

No Serious Losses Would Come to Pittsburgh

Pittsburgh, Oct. 22.—No serious losses would come to manufacturers of steel and steel products in this district in the event of peace or an armistice abroad. Some government contracts made at the entrance of the country into the war contained a clause which permitted cancellation in the event of peace before the orders were completed. Such business, however, long since has been completed and the orders that now remain on the books of the various companies either are noncancellable or stipulate that in the event the government does not require the supplies ordered, that the manufacturers shall be compensated for all material in process and also for any expense attendant in starting production.

With regard to foreign contracts, an attempt was made to include a clause whereby buyers might substitute a tonnage of commercial steel for war uses that might not have been completed when peace came. Few orders were accepted by Pittsburgh district manufacturers containing such a provision because it was realized that extreme difficulty would be experienced in arriving at a satisfactory means of substitution, especially with regard to prices for the tonnages that would take the place of war supplies. Only straight out-and-out orders were booked but it is doubtful if manufacturers would insist on full compliance with the terms of the contract in the event of peace, because in the long run it probably would prove cheaper to permit cancellation than to seek legal means of enforcing the contract.

Cessation of hostilities it is expected would not find instant reflection on the orders for steel for ships and cars. According to estimates made by the Emergency Fleet corporation officials the ship building program must go forward at its present rate until 1922. As a result of losses through submarine sinking and the natural losses from wear and tear, collisions and storms, the worlds shipping tonnage today is considerably lower than it was in 1914, and to have the same tonnage in 1922 that would have been in existence had there been no war, shipyards must continue to operate even more fully than they have during the period of the war.

There are orders for fully 100,000 cars on the books of manufacturers at present. These are orders placed by the government and there is no doubt that this equipment is badly needed. At the same time, the railroads if under private management, would not have ordered so freely and there is a possibility that if the roads go back to private control, some cancellation is inevitable.

Believe Machinery Orders Will be Carried Out

New York, Oct. 22.—Machine tool contracts for the most part carry a clause which permits the government to reject the machines on inspection at point of shipment. In numerous instances, the government has purchased the entire output of builders in an effort to equip plants for war work. These tools remain the property of the government and in some shops, row after row of machines are to be seen each carrying a plate which reads: "This machine is the property of the United States government." It is roughly estimated that the government owns in excess of $90,000 worth of machine tools in various establishments throughout the country.

Opinions vary as to what effect a cessation of hostilities may have upon machine tools. Government contracts contain no provision applicable to the coming of peace. Well-informed men in the industry and those in close touch with war work believe that contracts for machine tools will be carried out; others that the government will accept and pay for all tools built up to the time actual conflict ceases and still others feel that a proper adjustment will be made and those plants which have had to expend a great deal of money to meet the government's demands will be reimbursed.

Expect Shell Steel Orders Will be Cancelled

Youngstown, O., Oct. 23.—Makers of shell steel feel that if the war should come to an end abruptly all United States contracts for shell steel automatically would be cancelled. While government contracts for shell steel are bare of any clause which hinges on the cessation of hostilities, yet it is the opinion of nearly all sales officials here that their respective companies will make no effort whatsoever to bind the government to its agreement. Hence the general opinion is that if the war should terminate at once, the government is free to cancel all its contracts or leave them in vogue as it sees fit. As to French contracts for shell steel these likewise contain no clause which bears on cancellation at the close of the war. British contracts for shell steel, however, plainly state that in event of peace, no matter how large or small the tonnage of unfilled orders for projectile steel, an equivalent tonnage of other forms of steel shall be provided by the maker instead, the substituted commodity to be decided upon by mutual agreement between the buyer and the seller.

Sheetmakers are of the opinion that all government contracts for sheets will be cancelled automatically at the close of the war, although there is no clause in the agreements which bears on this matter. Sheets made for the government now are usually of an odd size and if offered to the domestic trade they would have to be cut down to meet other specifications. This would entail a loss on the maker's part. It is thought the government when peace comes will allow the maker to dispose of any rolled tonnages on hand at such a price as he can get and in event this price is lower than the contract price the government will advance the difference to the maker.

Ore Producers Add New Clause to Contract

Cleveland, Oct. 22.—Provision for meeting conditions which might arise through the discontinuance of government regulation are being met in the ore trade through the affixing to contracts of a new clause. This covers payment on deferred tonnages carried over into the 1919 navigation season. The clause provides that the price on this postponed tonnage shall be the maximum quotation permitted by proper government order and regulation, or in the event of no such regulation, the price shall be the last quotation effective. In no case, however, is the price to be less than the figure specified in the contract.

Will Release Ship Steel for Other War Work

Pittsburgh, Oct. 23. (By wire.)—It is reported from Philadelphia that from 10,000 to 15,000 tons of steel allotted to the shipyards will be released each week to other war industries. This announcement was made by Director General Charles M. Schwab, of the Emergency Fleet corporation, after a conference with representative shipbuilders in the East. The 50,000 tons of steel per week assigned to the shipyards, it is said, proved to be beyond the needs of the plants operating as they are at present with the shortage of labor.

George L. Bollinger, age 52, president of the Bollinger-Andrews Construction Co., Pittsburgh, died Sunday, at Los Angeles, while enroute to the Hawaiian islands for his health. Mr. Bollinger was a native of Latrobe, Pa., but had resided in Pittsburgh for the last 34 years. Death was due to heart disease.

Shell Equipment

To Be Provided By Government In Semisteel Program

Pittsburgh, Oct. 22.—In its endeavor to line up capacity for the production of semisteel shells, of which 33,000,000 of various sizes are asked for, the government has offered to provide manufacturers having the right sort of organizations with the equipment necessary for the machining of these shells. No renting or leasing charges will be imposed, the only expense that those qualifying will have to stand is that of installation. The equipment will go back to the government after the war, on a fixed basis of adjustment.

A committee of Pittsburgh manufacturers which recently conferred with officials of the ordnance department in Washington, reports that the government is now prepared to enter into contracts for 6 and 8 inch shells. Those planning to make bids, however, must permit inspection of their plants by an ordnance officer who must approve before the owner can make a bid. This, it is explained, is due to the fact that the government does not care to take the chance of a failure on the part of someone securing a contract.

The government, in placing these contracts, also is making sure that the companies who bid have stable and efficient organizations. There is no objection, according to the report brought back by the committee, to a foundry and a machine shop combining on a contract, but the contract will be let to one or the other, depending upon which is the best and strongest organization. The prices the government will pay for these shells have not been made public, but can be secured from members of the committee, of which George L. Brown, of the Marshall Foundry Co. is chairman.

It is stated that the government has under preparation a treatise on the manufacture of semisteel shell, which details practice in the foundry and machine shop, outlines the necessary equipment and also gives valuable suggestions and illustrations. It is hoped to have this treatise ready shortly.

Checking Epidemic

In Western Pennsylvania—Less Than 10 Per Cent of Workers Out

Pittsburgh, Oct. 22.—Operations of the steel, munition and other plants in this district engaged in the manufacture of war products have not been seriously affected by the influenza epidemic, and while the health authorities hesitate about stating that the worst is over they believe a successful fight against the epidemic is being waged. A few alarming reports are coming in; for instance, the McClintic-Marshall Co. reports that in its fabricating shops at Rankin, Pa., 150 of the 650 men employed there were ill. Such reports, however, are the exception, and taking the steel and war work plants as a whole it may be stated that reports to George S. Oliver, regional advisor of the war industries board for western Pennsylvania, suggest a loss of men through sickness of not in excess of 10 per cent.

Loss of production probably is considerably less, for men are out in a number of plants where, because of a limited scale of operation, the men can be spared without materially affecting output. This particularly is the case in the steel mills, where outside of the shell round, plate and rail departments, operations do not average much in excess of 50 per cent of capacity, due to the fact that there is an uneven distribution of ingots.

Uncertain on 1919 Ore

Cleveland, Oct. 22.—Contracts for iron ore for next year's delivery are receiving little attention either from producers or consumers. Uncertainty over the war situation leads furnace operators to hesitate to consider next year's obligations. The first contracts drawn up are expected to be for manganiferous ore, for which the demand promises to exceed the supply.

Order 6000 Motor Trucks of Michigan Plants

Detroit, Oct. 21.—Orders for 6000 class B army motor trucks to cost from $12,000,000 to $14,000,000 have been distributed as follows: Denby Motor Truck Co., 1500; Lewis-Hall Iron Works, 500; Wilson Motor Truck Co., 500; Signal Motor Truck Co., 500; Standard Motor Truck Co., 750, all of Detroit; Republic Motor Truck Co., Alma, Mich., 2000, and United Motors Co., Grand Rapids, Mich, 500.

The Timken-Detroit Axle Co., has an order for axles for 40,000 artillery tractors. The Packard Motor Car Co. will build 10,000 of the tractors.

The Non-Ferrous Metals

Copper **Lead** **Spelter** **Tin**

	*Copper	†Spot Straits, tin	‡Lead, New York basis	Spelter St. Louis basis	§Aluminum	Spot antimony
Oct. 16	26.00	.....	8.05	8.50	33.00	13.62½
Oct. 17	26.00	.....	8.05	8.62½	33.00	13.62½
Oct. 18	26.00	.....	8.05	8.75	33.00	13.50
Oct. 21	26.00	.....	8.05	8.90	33.00	13.50
Oct. 22	26.00	.....	8.05	8.90	33.00	13.50

*Government fixed maximum price for prime lake, electrolytic and casting copper, in ingots, pigs, slabs, etc., less than carloads, 27.30c.

†No spot Straits tin offering.

‡Price agreed to by leading interest and independents.

§Government fixed price for 98 to 99 per cent ingot aluminum in 50-ton lots; lots 15 to 50 tons, 33.10c; one to 15 tons, 33.20c.

NEW YORK, Oct. 22.—Possibilities of early peace, although considered remote by many people, nevertheless were the predominating factor in the metal markets the past week. With the arrival of the new German note, however, the market could see nothing but war. Dealers were not inclined to commit themselves in the future, while consumers also were inclined to lay back, awaiting the outcome of the present interchange of notes, and even despite the feeling today no change was shown in prevailing quietness.

Following the award of 9000 tons of grade C spelter by the government recently, of which part went to the New Jersey Zinc Co., part to the American Metal Co. and part to other producers, the spelter market has strengthened decidedly. Sales of prime western were made at 8.50c, East St. Louis basis, for prompt shipment, last week, while today 8.90c could be obtained for the same position. The market for forward positions also is firm, November being quoted 8.60c, December 8.50c and first quarter 8.25c. High grade is steady at around the maximum price of 12c, East St. Louis basis, sales being reported at this price the past week.

Tin importers are now definitely eliminated from the business of importing tin for the duration of the war. Their function henceforth will be performed by the United States Steel Products Co., which company, however, has not yet actively undertaken the control of tin distribution. No maximum price has yet been fixed for the various grades of tin, but John Hughes, chairman of the tin subcommittee of the American Iron and Steel Institute, is due back from England within a few days, when an important announcement, detailing the new tin control, is expected.

Lead production in September exceeded that of August at the refineries, although it is believed mine production declined. Demand for lead still is in excess of supply, but the tension is not so severe as it was a few weeks ago. The agreed prices are unchanged at 8.05c, New York, and 7.75c, East St. Louis basis.

The government has distributed orders against its recent inquiry for 3000 tons of 99 per cent antimony metal, but details are not yet available. Ordinarily, such an inquiry as this would have created considerable stir in the antimony market, which is highly speculative, but the peace prospects have been so uncertain that the dealers have hesitated to speculate. The market for spot antimony, despite the large inquiry, has softened somewhat during the week, spot metal now being obtainable around 13.50c, duty paid.

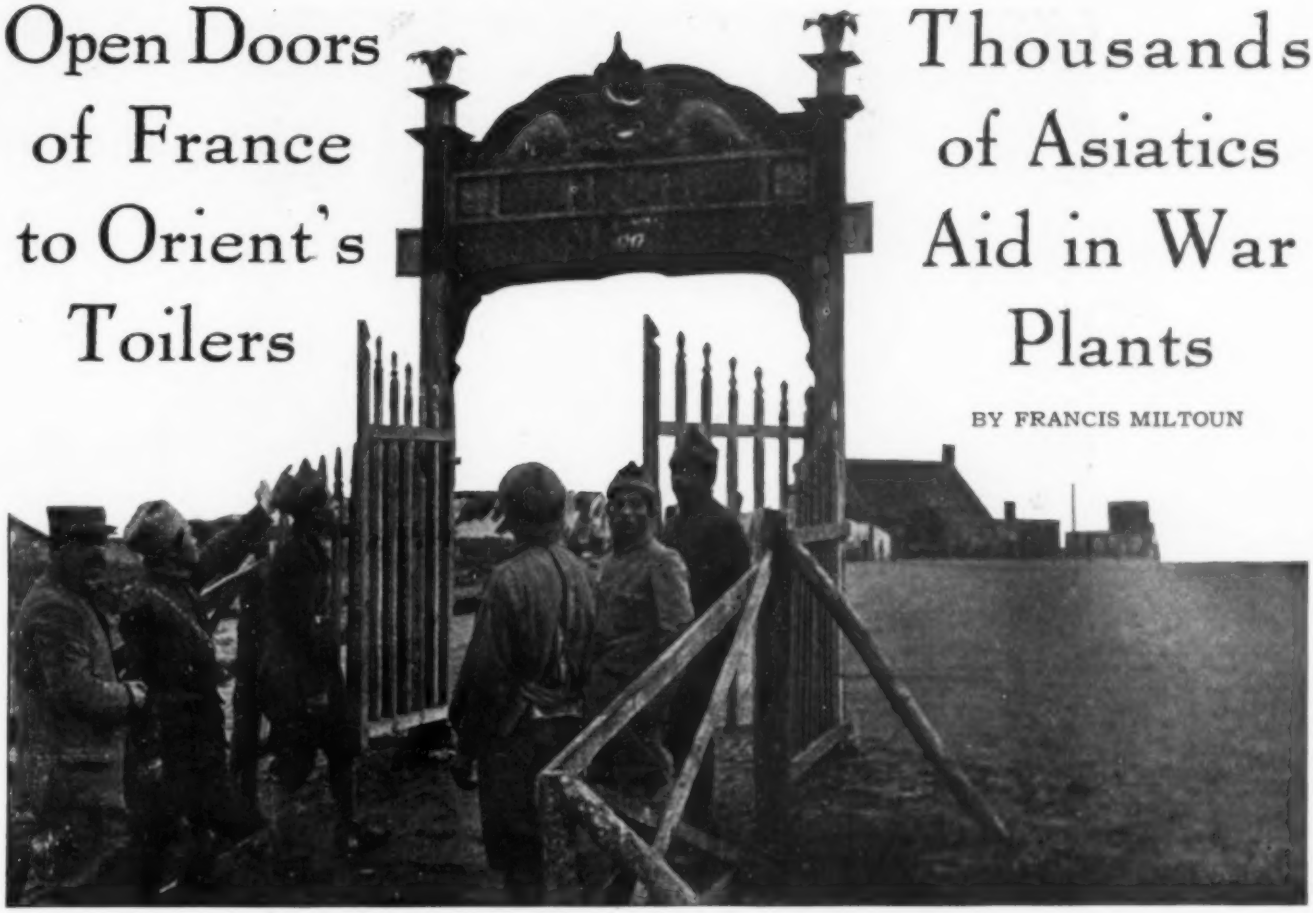
Influenza is causing inroads on copper production at the Perth Amboy, N. J., smelters, owing to exposure resulting from the recent Morgan disaster. Although the war industries board recently suspended price meetings with trade authorities because of the epidemic, it will keep its scheduled meeting with the copper producers, on Oct. 25, to discuss the prices effective after Nov. 1.

The aluminum market is unchanged at 33c, the maximum price established by the war industries board, effective until March 1, for 98 to 99 per cent virgin ingot, with differentials for grades and manufactured shapes.

Open Doors of France to Orient's Toilers

Thousands of Asiatics Aid in War Plants

BY FRANCIS MILTOUN



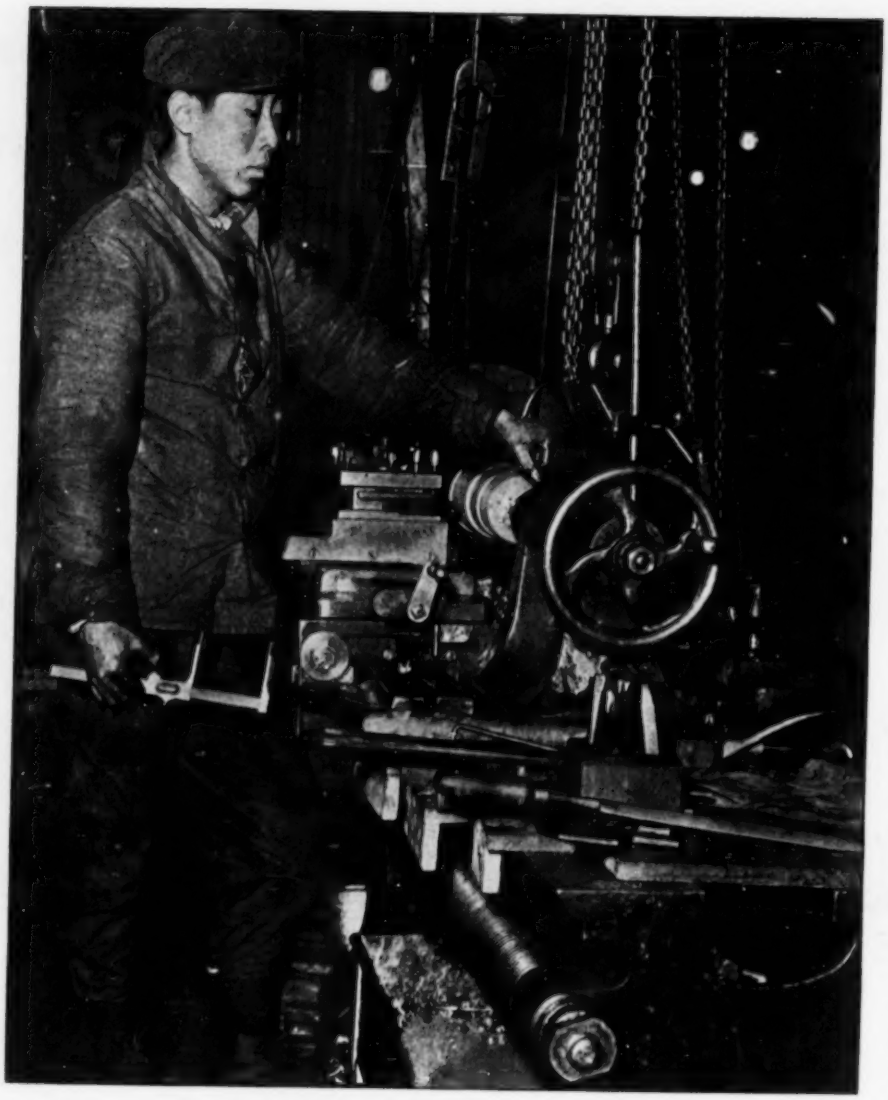
Entrance to Annamite Workers' Camp, Back of Battle Line in France

FRANCE during the war has seen the coming of women labor in her factories to a proportion which within a year has risen from 39.6 per cent to 40.2 per cent. For every hundred women employed in the metal industries before the war there are today 913, the greatest extension of woman labor in any of the seven great trades which statisticians consider when "sizing up" a country's resources for industrial purposes. Despite the aid from women working in the fields, on the railways and in the munition factories, even to the extent of manipulating 1000-ton hydraulic presses, it has been necessary for France to recruit labor from abroad. The recruiting still goes on, as not even the many thousands already brought across the seas are sufficient. It is for this reason that we see American-mobilized soldiery building and repairing cars in the French railway shops, cutting lumber in the forests and building docks.

German prisoner labor, too, has been largely used in France, at distances more than 15 miles back of the front, as per the ruling of The Hague convention, but naturally not on ammunition or armament work, though I have seen them employed on docks and in shipyards, on the roads and in the fields. They are being used all over France, usually in the open air.

ANNAMITES FILLING SHELLS IN FRENCH MUNITION FACTORY

Between the two classes of labor on which France had first to fall back on, that of women and of prisoners, is that of Chinese, Kabyle, Senegalese and Moroccan which has been recruited by the French government for all manner of rough work. This African and Asiatic recruitment has brought about entirely new conditions of life and work; it is even changing the *nourriture* of *la belle France*, the "land of good cooks." The Chinaman eats rice and green onions and the African Arab eats a "greasy rag and an olive," this according to the contemptuous way the French workman refers to the food of this imported labor. Accordingly, the Frenchman does not fear in the least its after-the-war competition. With the Americans in the car shops, though they wore Uncle Sam's uniform, he, at first, had some doubt and wondered if they might not stay after the war. After he learned that their wages at home were three to five times what they are here, there was no longer any speculation, only wonder that they did not drink wine with their meals and smoke "hay-colored cigarettes of the odor of honey." Even the British are using north-Chinese labor back of their lines. I have seen one camp in the British sector in the north of France where there were 20,000 Chinamen, semi-militarized with their own kitchens, their own doctors and their own section bosses, who, in a sort of military uniform, controlled them at their work like sergeants and corporals. The French system is much the same, and now it has been applied to the "Amex" forces on much the same basis. The Chinese do all kinds of heavy labor and are paid approximately 30 Mexican dollars a month. In foundries and moulding rooms and particularly in digging ditches and armored cement work they are in every way to be considered a success. The French barracks in which they are lodged are light and well ordered, policed and served by husky Chinese in blue pajamas, the counterpart of those we knew as laundrymen at home.



ANNAMITE METAL WORKER IN FRENCH AMMUNITION PLANT

ANNAMITE FORESTERS PROVE EFFICIENT WORKERS IN FRANCE

They sleep on planks with thin straw mattresses, a sort of altar or high tea table, covered with calico, which holds a tea pot, from which a Chinaman is never very far away, and a Seth Thomas clock from America. The arrangement is almost that of a ritual. One stipulation, written or unwritten, is that they shall not be herded with whites.

At work the Chinaman also observes traditions. If he is rough-turning a shell he spends about half his time brushing the chips into a neat little heap. He digs a draining ditch or lays a railway with the same methodical care. His labor is slow but productive of good results.

The Annamites or Indo-Chinese laborers, even more largely used by the French are of another variety, more skilful, less of the "pair-of-hands" kind than that of the north country Chinamen, Give an Annamite, with his peaked mushroom hat, a hammer, a saw and a handful of nails and he will build most anything out of a pile of boards. The French have used Annamites from the beginning of the war as artisans. They work in pattern shops, making ammunition boxes, grind shell cases and finish and load grenades.

The red-fezzed north African laborers have not been successful in factories or where skill of any kind is required. They are used for street cleaning and auxiliary municipal service, releasing others more capable for more expert labor. To some extent they have been used on the farms and about factories for mere manual labor, but not for handling machinery of any kind; the traditions of the land of their birth and the religion of their Koran appear to be against it.

If the Chinaman drinks tea, the Kabyle and the Moroccans drink coffee, and spend about half their time doing it, or smoking cigarettes. The Chinaman is seemingly about 40 per cent efficient, the Annamite about 60 per cent and the North African anywhere from 10 per cent to 40 per cent, depending on how he is controlled.

CHINESE WORKING BATTALION'S CORPORAL

Exotic labor in war-time France must be considered an expediency rather than a good business measure. It marks, at any rate, a revolution brought about by the war in towns and factories where the sound of cannon is not heard. Indeed, none of thes exotics seem to be able to stand up against the shock of big-gun fire in the neighborhood.

War industries, *usines de la defense nationale*, sprang up all over France during the first year of the war, their labor largely recruited from the returned, mobilized soldiers who had first been tolled off to the fighting front.

As efforts increased, with 60 per cent of the total metal industries in the invaded regions, and their personnel dispersed to the four quarters of France, new sources of labor supply had to be tapped. The Longwy, Joeuf and Homécourt forges and the Fives-Lille, Valenciennes and Fourmies metal industries were *non est*. Their places were taken by other factories established elsewhere in the center, the west and the south of France. Le Creusot decupled its forces, Paris, Lyon and Saint Etienne became hives of industry.

The labor shortage became more and more apparent and the recruitment of exotic *main d'oeuvre* a necessity. From overseas or contiguous countries were brought Kabyles, Malgaches, Senegalese, Spanish, Portuguese, Greeks, Annamites and Chinese, each appointed to the labor for which he seemed best fitted by nature. The actual specialist labor of the machine shops was done by Europeans, the rough work of foundry and transport and building extension largely by Chinese. Of the latter, it is estimated that 100,000 are already in France, many of them working for the American military establishment.

Chinese, Annamite, Senegalese and Moroccan labor is not difficult to handle, simply requiring tact on the part of foremen, corporals or "No. 1 men," whom it seems desirable to appoint from their ranks. It is the procedure the French had employed in the government of their north African colonies. The language questions seems not to enter into the problem.

Portable Conveyor Solves Labor Problem

WHEN unskilled labor was cheap and plentiful, the problem of handling materials of various kinds did not receive the general attention of mechanical engineers, owing to the fact that there was no heavy demand for appliances to take the place of ordinary labor. Today, however, the situation is different. Labor is scarce, wages are high and, because well paying jobs are plentiful a number of workmen cannot be depended upon to stick to their job. Thus, it is natural for the engineer to turn his

FIG. 1—TWO PORTABLE CONVEYORS ADAPTED FOR LOADING COKE CARS. THE DEVICE IS READILY ADJUSTED TO MEET VARYING CONDITIONS

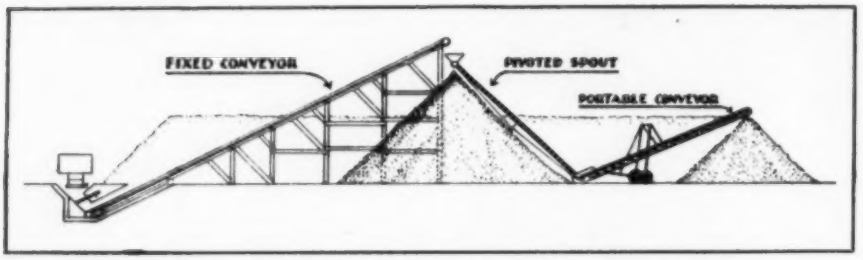


FIG. 2—BUILDING A BACK PILE WITH A PORTABLE CONVEYOR.

attention seriously to machinery to take the place of labor heretofore employed in handling materials.

This situation has hastened the development of light, portable conveying appliances, one of which is shown in Fig. 1. This device is a product of the Barber-Greene Co., Aurora, Ill. The illustration shows two portable belt conveyors loading coke into railroad cars. It is said that the cars are loaded in two to four hours, the time depending on the size and type.

The Barber-Greene Co. has developed several types of conveyors to handle different materials. For elevating at angles under 25 degrees, it has been found that a plain belt gives excellent results. With angles from 30 degrees and upward, however, the belts are equipped with steel flights to prevent the material from slipping down grade. The conveyors are made portable by mounting them on wheeled trucks or by suspending them from a trolley attached to an overhead steel cable.

A novel application of a conveyor is shown in Fig. 2. Here a fixed conveyor is used to carry material from cars to a pile and when the capacity of the pile has reached its limit, a portable conveyor is brought into use. The fixed conveyor discharges into a pivoted spout which discharges into the portable conveyor and, as the illustration shows, a back pile is made. This relieves congestion near the railroad siding.

At the present time, portable conveyors can be adapted to a variety of applications, among them being the unloading of cars into piles, storage sheds, wagons or motor trucks, or *vice versa*. When the distance the material has to be conveyed is comparatively long, two or more conveyors can be worked in combination.

Portable Arc Welder

Until quite recently, electric arc welding has been confined to manufacturing plants and repair shops in the iron and steel industry, where the work could be brought to the welding outfit. With the enormous expansion of the shipbuilding industry, however, came a demand for a portable outfit that could be used in places where electric current was not available.

To meet this demand, the Lincoln Electric Co., Cleveland, recently developed the outfit shown in the ac companying illustration. The unit consists of a 150-ampre arc welding generator, which is direct connected to an internal combustion engine, radiator, gasoline tank, rheostat and a control board. The outfit is mounted on skids for easy transportation from place to place, preferably by a motor truck or flat car.

An interesting point in the construction of this outfit is the method adopted to insure a steady arc and constant and readily controlled heat. It is generally conceded that these are two of the greatest difficulties met with in the design of this kind of apparatus.

The Lincoln company uses a compound-wound generator, the series windings of which are connected so as to oppose the shunt field and the two windings are so proportioned that the voltage decreases in the same ratio as the current increases. This limits the short circuit current. Another important effect of this is that the horsepower and, therefore the heat developed for a given setting of the regulator switch which is shown on the control board above the generator, remains practically constant.

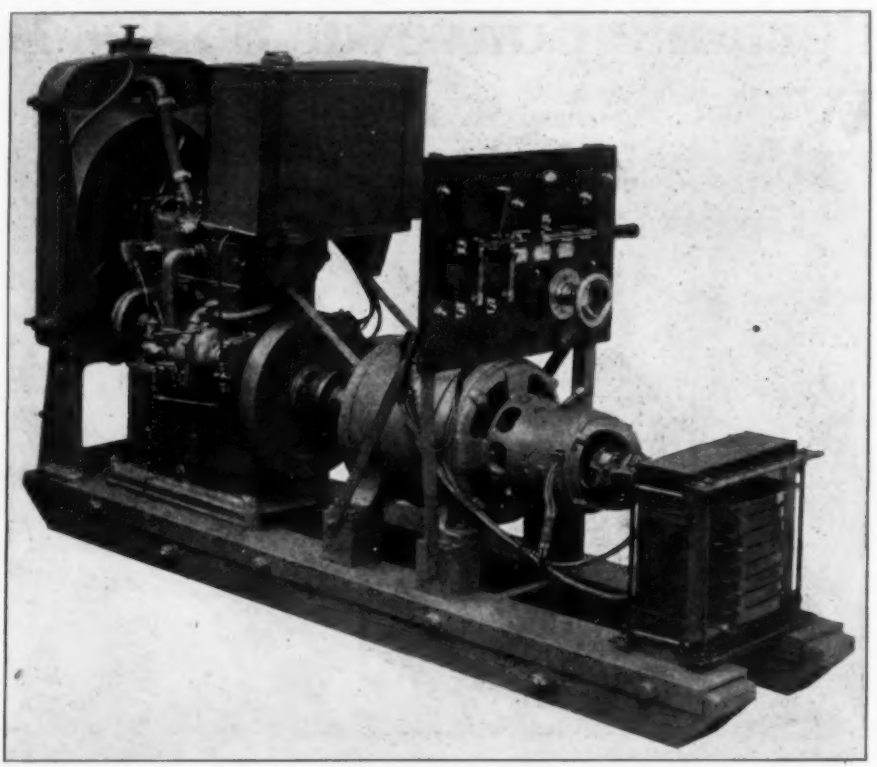
Additional stability is also insured by the stabilizer seen at the extreme right of the illustration. This is a highly inductive low resistance coil connected in the welding circuit. It serves to connect momentary fluctuations of current in much the same manner as the flywheel of an engine produces an even rotary speed.

A joint meeting of the Indianapolis, Cincinnati, St. Louis, Chicago, Milwaukee, Detroit, Erie, Buffalo and Cleveland local sections of the American Society of Mechanical Engineers will be held in Indianapolis, Oct. 25 and 26. One of the features of the meeting will be an explanation of the regulations of the United States fuel administration by a member of the administration. There also will be a professional session with papers and discussions on technical research as applied to the war. The council of the society also will meet in Indianapolis at the same time. An informal dinner will be given on Oct. 25.

The speakers at this meeting will include Charles T. Main, Boston, president of the American Society of Mechanical Engineers; M. E. Cooley, president elect of the society; David Moffatt Myers, advisory engineer, United States fuel administration, Washington; Dr. L. H. Baekeland, member naval consulting board and national research council; and D. R. Yarnall, chairman, committee on local sections, A. S. M. E.

The total production of manganese ores in the British empire in 1916 is reported to have been 639,166 metric tons, the largest proportion of the output, 631,083 tons, coming from India. The largest production outside the British empire was in Brazil, 503,130 tons. The production in the United States was 27,000 tons.

The production of nickel ore and matte in 1916 is given as follows: Canada, ore mined, 1,566,333 short tons; ore smelted, 1,521,689; bessemer matte, 80,010; nickel content of matte, 41,298; New Caledonia, ore exported, 30,679 metric tons; matte, 4935; Norway, metallic nickel, 800 metric tons.



PORTABLE ELECTRIC ARC WELDING OUTFIT MOUNTED ON SKIDS.

Meeting Draws International Ideas

Discussion of Papers at the Fall Session of the British Iron and Steel Institute is Marked by Exchange of Expert Opinion on Practice Developed by War Exigencies—Americans Participate

BY JOSEPH HORTON

British Correspondent of The Iron Trade Review

SIR ROBERT HADFIELD in commenting on a paper at the fall meeting of the British Iron and Steel institute again exposed the clay feet of the German idol. He stated that science was indebted to M. Georges Charpy, Paris, for the system of the notch test. He explained that while walking through the Krupp works in Germany before the war, he found that much of the wonderful work being done there was founded on previous research by M. Charpy with the notch test. The iron and steel industry therefore was indebted to France rather than to Germany in this respect.

The paper presented by M. Charpy on "Influence of Hot Deformation on the Qualities of Steel" was read in the author's absence by the secretary G. C. Lloyd. In the discussion which followed, Dr. J. E. Stead remarked that for generations engineers had assumed that the more work put upon steel the better the resultant quality. Now M. Charpy's paper stated that in a great many cases there was no such benefit, while in regard to cross sections the excess of work put on the steel deteriorated the structure. Dr. Stead's experiments extending over many years in the same direction, although employing more simple methods of testing, practically confirmed these results. For a period of about 20 years he had to examine a great many rail sections and he made a point of cutting the sections through the head, then putting them on a V block and striking them. Except in the case of the best rails they all broke off almost like cast iron, without deflecting more than five or six degrees. He believed that depended largely upon the amount of nonmetallic inclusions present. The worst cases of weakness in cross directions he found in wrought iron. He had taken the best Yorkshire wrought iron, certainly the best obtainable in England, and when he cut through the cross sections and struck the bar with the hammer it snapped off after bending only about five degrees. In proportion as they increased the sulphide of manganese and the nonmetallic inclusions in rolled steel increased in proportions as they approached the qualities and properties of wrought iron. The bars did not deteriorate the quality in the longitudinal direction but the quality steadily reduced in the cross direction. Commercial billets and steel bars containing from 0.07 to about 0.03 per cent of carbon and .07 per cent of sulphur would bend in a longitudinal section up to 180 degrees, but in a cross section they would break readily on bending. The speaker gave several illustrations of such fractures. They obtained the best results in parts free from nonmetallic inclusions; but pieces strongly segregated in the middle of the metal the bar snapped like a carrot. It was quite clear that the nonmetallic inclusions made the cross section so much inferior to to the longitudinal section. The speaker stated that if they rolled an ingot from two feet down to a two-inch billet they had the sulphide blowholes and segregations exactly in the same relative positions as in the ingot. But if they hammered the same ingot they had an entirely different effect because the segregate was not spread equally through the metal. This effect of that is often shown in angle iron.

Dr. J. S. Unger, of the Carnegie Steel Co., Pittsburgh, called attention to the fact that in certain American specifications it was definitely required that the reduction from the ingot to the finished forging must be at least a ratio of four to one. That was insisted upon by one of the railway companies in the forging of locomotive axles. To test the effect of this forging he made an experiment. He had an ingot 15 inches square, cut into three pieces. One was forged round under a 7000-pound hammer another under a 15,000-pound hammer and a third under a 2000-ton hydraulic press. One portion was reduced 50 per cent from the original area; the second 40 per cent and the third 30 per cent. The temperature was the same in all cases. He found to his surprise that there was little difference in the physical properties when the forgings were tested, though the piece forged under the press showed a trifle the best results. He had the greatest doubt whether in a a great many cases the manufacturer was not asked to do more forging than was necessary. With other experiments he found that he did quite as well with 25 per cent reduction as with 100 per cent reduction.

H. H. Ashdown pointed out that in a hollow forging heat was lost more rapidly at the ends, and was therefore much more severely stressed. It was awkward for gunmakers that failures often took place near the end of the forging.

Cosmo Johns said he was in complete agreement with the conclusions of the author with regard to the effect of work upon steel and everyone who had had experience with hollow forgings would say the same thing. The greatest difficulty of course was with material containing maximum impurities and the difficulty in forging was that the work could not be done equally in all directions.

Sir Robert Hadfield stated he could fully confirm all that Dr. Stead said. A great deal of trouble had arisen with high quality steel for airplane and automobile construction and it was important to study internal defects. The paper threw much light on the problems connected with the defects arising from unsoundness in steel; but he thought most of the troubles came from unsoundness in the original ingot or cast billet. M. Charpy entirely confirmed what Sir Robert Hadfield put before the institute at the last meeting, that if they obtained the highest possible quality they need not require extraordinarily large ingots. By taking a good small ingot or billet they could get as good results as by taking a large ingot and forging it down.

Dr. Hadfield remarked that anyone associated with armament work, where large masses of steel had to be dealt with, had long been familiar with the facts set forth by M. Charpy. An engineer reading the paper might legitimately infer that work on the steel was a disadvantage and that it was better to take cast than forged steel. The first essential was to get sound steel and to secure that they must have an ingot wide at the top and narrow at the bottom with a good refractory head. Otherwise the ingot would contain dangerous defects. Diverse configurations in steel castings made it almost impossible that the steel should be free from all possible causes of failure. Apart from that, forging and pressing operations were not merely mechanical. Cast steel was originally in indifferent mechanical condition, and the actual forging operations, necessitating exposure to high temperature, brought the material into a vastly improved state. They knew that density was not increased by the forging and pressing. In Sheffield they believed that increased sulphur content induced more manganese sulphide, and the evils to which M. Charpy had called attention would be strongly emphasized. Therefore they insisted on a low sulphur content. As to the bad bending in gun forgings to which Dr. Stead had referred he attributed them to slag inclusions, caused by defective finish.

Dr. Rosenhain pointed out that Cosmo John's suggestion of working equally in all directions was obviously impossible, because there would be no change in shape. It was clear that they must not only have a sound ingot, but an ingot approximating as nearly as possible to the final shape desired, so that the energy upon it should be as equally distributed as possible.

Relation Between Ball and Scleroscope Hardness

SPECIAL interest was taken in a paper on the relation between ball hardness and scleroscope hardness because of a statement made by Sir Robert Hadfield at the May

meeting of the institute when he announced the receipt from A. F. Shore, New York, of the following telegram: "Have found apparent true scientific relation of ball and scleroscope the way to measure by ball faithfully up to 800 degrees. Exhaustive analysis by both methods, and their relation to a constant depth variable load ball system." The paper contributed at this time was an amplification of this telegram, and had an introduction and a commentary by Sir Robert Hadfield. The latter added a further word of introduction as the author of the paper was not present.

Professor Turner said it was no doubt necessary and important to correlate the two tests of Brinell and Shore. Obviously Mr. Shore's method was intended to give the elastic limit of the material, while Brinell gave the approximation of the tensile strength to the maximum load. Obviously it was desirable to start with material in which they had the elastic limit and the tensile strength identical. The speaker dwelt in some detail on the question of the best method of practically utilizing Mr. Shore's suggestions.

Cosmo Johns pointed out how complex this research was becoming because of the great multiplication of factors. He hoped that at an early date efforts would be made simplifying the problem and leading to a solution of their difficulties. Undoubtedly, the Brinell test was the most useful they had ever employed for testing the hardness of large objects. He thought that Mr. Shore's investigations would have to be carried further before they could be made of practical use.

Sir Robert Hadfield replying on the discussion made special reference to the remarkable work done by Professor Turner in Birmingham. It had been pointed out that it was almost impossible to define hardness, and the speaker suggested that it was desirable to hold a symposium on this subject. He as president of the Faraday society would much welcome such a step, and he thought they would all give it their most cordial support.

Standardization of Tests for Refractory Materials

A PAPER on the standardization of tests for refractory materials was read by Cosmo Johns. Professor Turner who has taken great interest in this subject said that on a previous occasion he had suggested the laying down of a series of simple tests for refractory materials which should be offered to manufacturers. He was still convinced that such tests were of more practical value to the average manufacturer than the much more refined work generally advocated. He thought the great value of Mr. Johns' paper was the inclusion of just such tests, particularly for dealing with clays. Some of the tests described had been in use by himself and others for the past 20 or 30 years. The speaker proceeded to describe a number of other tests for crushing, though he said he thought that too much attention had been given to tests of the crushing strength of material. Nobody dealt with a single brick except in testing, and they really ought to take into account the jointing material. The crushing strength of brickwork was often not more than one-third that of the brick itself. He had found the transverse test suitable where they wanted to ascertain strengths without the use of expensive apparatus.

H. M. Ridge emphasized the necessity of testing the firebricks under working conditions by applying the temperature at which clay would be used and the test should be at least on full-sized bricks. The way 50 people were carrying out with the same make of firebrick the same test would be humorous if it were not tragical. Surely the research committee should get general results available for every one. There should also be tests for the bonding material. The matter interested other societies, but the Iron & Steel institute was the largest user of refractory materials, and there should be an ample opportunity given on a future occasion for a full joint discussion by all the societies interested.

Dr. Rosenhain urged that there should be a standard or reference test to which they could apply the highest available measurements. While a simple test would be useful, the advancing requirements of metallurgy called for highly refined scientific tests. Better results in metallurgy were almost entirely dependent upon getting better refractories.

Dr. J. S. Unger called attention to the fact that America had been doing much work in connection with the testing of refractory materials, especially firebrick used for iron and steel. But a great deal of the testing did not yield information of value to the user. The ordinary firebrick was not fitted to resist the great variety of temperatures in the blast furnace. The ordinary chemical analysis would not generally indicate the quality of the brick. He had seen bricks of identical composition turn out quite differently. One would turn out badly and the other remained for five years in a blast furnace from which a million tons of iron had been turned out. But a pronounced change would be found to have taken place in the chemical composition of the brick. The alumina of the brick was practically unaltered. But a large proportion of the silica had been replaced by an element containing 7 to 9 per cent of iron. The alkalis had been increased seven times. If the brick altered so greatly the original chemical composition could not be of much importance. The test applied was to heat the brick up to a working temperature and then cool it rapidly. The effect was to remove all loose material and the amount of loss was then determined. Some remarkable figures were thereby obtained in examination of the slag in open-hearth work. Too much work had been done in tests which had only a purely theoretical value. Some people tested one brick in 50. All improperly molded or warped bricks should be thrown out but it was quite sufficient to apply the spalling or crushing test to one brick in every thousand. As far as possible they were tested at the usual heat of the furnace. This effect was secured by surrounding the brick with a clay ring putting in 35 grams of slag and then heating it to 1350 degrees Cent. Then the brick was cut longitudinally and treated with a carborundum wheel. They found that the slag had penetrated to a depth of half way through from the top. A planometer served to determine the area of the penetration.

Prevention of Growth in Gray Cast Iron

THE paper by J. E. Hurst on the subject of a method for the prevention of growth in gray cast iron was read in abstract by the author. Dr. Hadfield declared he was in entire disagreement with the general conclusion of the author. It had been suggested that it was possible by such means to utilize castings below the proper size. He would prefer to scrap the castings rather than submit them to such treatment, which was absolutely ruinous.

Dr. Stead and others gave their veiws as to the precise causes of the growth and Sir Robert Hadfield observed that the first research was by American metallurgists.

Dr. Unger pointed out that at a meeting of the American Institute of Mining Engineers, Alexander Outerbridge, in February or March of last year, discussed the growth of cast iron, and submitted some samples showing how the growth was produced. The paper could be found in almost any American publication.

Warping of Steel Through Repeated Quenching

FOLLOWING a paper on the warping of steel through repeated quenching by J. H. Whiteley, Dr. Stead pointed out that if a short cylinder of iron or steel were heated over half its length and then quenched, and the operation repeated a sufficient number of times it was possible to convert the cylinder into a cone. That treatment had actually been applied by engineers for altering the shape where such treatment was known to be useful. When heated iron was plunged into water its shape changed; in fact it was never the same shape as it was before. As to the distortion of the material structure, it was obvious that the sulphide inclusions also were distorted with the iron.

Notes on Bosh Tuyeres

SIR ROBERT HADFIELD presided at the second day's sitting of the conference, when J. Hollings read his paper on bosh tuyeres.

J. E. Fletcher said many blast furnacemen had been considering during the last few years the advisability of using bosh tuyeres. Those who believed in bosh tuyeres were not all agreed as to the proper position in which they should be placed. American practice, especially as described in the recent publications of J. E. Johnson, Jr., suggested that many difficulties would have to be overcome. The question of regular changing had to be considered, and there was doubt as to whether bosh tuyers would enable the slag prob-

lems to be handled more effectually.

Professor Turner remarked that while the practice of introducing bosh tuyeres had been growing during the past few years, the literature on the subject was scanty. The question was how far such tuyeres would be advantageous in general practice. He knew of no theoretical advantage—rather the contrary, provided the furnace was working uniformly, and the slag was made and easily fusible. The formation of the slag took place at some distance above the ordinary tuyere line. As the slag was apt to be sticky during its formation, leading to irregularities where they had high melting point of the slag, one could understand there was an advantage in many cases in having a controlled supply of air at the higher level. His own view was that any advantage from the use of such tuyeres was rather in overcoming difficulties due to influsible slags. At present there was no evidence of any other advantage. With slags rich in line or high alumina there might be an advantage. Obviously, Mr. Hollings had found an advantage, and the small increase in fuel consumption was exactly what might have been expected.

Cooling of Steel in Ingot and Other Forms

THE paper on the cooling of steel in ingots and other forms by J. E. Fletcher provoked remarkable differences of opinion. Dr. J. S. Unger responding to the call of the chairman, said that in carrying on such experiments they must be careful to adopt materials closely approaching steel. His own experiences with lead were not satisfactory, owing to the fact that the contraction of lead was much greater than that of steel. But zinc was more satisfactory, much more closely resembling steel. He wanted a material melting at a low temperature. It was essential to use a mold approximately of the material used in service. In casting steel it was desirable also to use a mold approximately of the weight of the ingot. The speed at which the metal was poured had a pronounced influence on the cavities.

Mr. Saniter dissented from Mr. Fletcher's theories with regard to gases and their effect in the casting. They must distinguish between blowholes caused by gas and the piping caused by contraction. He thought the author had attributed too much to the presence of gases in the steel.

Cosmo Johns said he agreed with Mr. Saniter that Mr. Fletcher had exaggerated the influence of the gases.

Dr. Arnold called attention to a development frequently met with in crucible casting. The melter described what he called a scorched or scalded ingot fracture. It was really due to teeming at too high a temperature. The melter tried to disguise it before it was stopped by the inspector.

Mr. Ashdown remarked that lately specifications had included a proviso requiring ingots to be cast with the big end up. Up to a certain size that might be quite right. But with large masses of metal it was a matter requiring careful consideration. From 10-ton up to 100-ton ingots they would have a powerful chilling effect at the bottom of the mold in addition to the natural chilling of the ingot. The actual effect would be to have chilling at the bottom with a liquid mass at the top. Instead of having the thermal lines running parallel to the mold they were apt to have them running obliquely near the top. In large masses the segregates followed the direction of the escaping gases. It was generally assumed that the segregates were in the center, but in large masses of metal they were much nearer the top. Even with 25 to 30 per cent cropped off the segregate near the top would have a bad effect. By feeding at the top they greatly minimized the effect.

Dr. Hadfield strongly protested against casting with the broad end at the bottom, which was contrary to all experience in Sheffield. They wanted the segregate at the top where it could be cropped away.

The chairman said six years ago he undertook a crusade, reading papers in England and America with the object of saving every pound of steel. They did not know how long the war would continue, but they already realized how important it was to avoid every pound of needless waste. By pouring in at the top of the ingot a certain amount of copper he had succeeded in reducing the waste of steel. He could not understand why that had not been followed up by more metallurgists. It was most important to follow up their investigations as to what went on inside the cooling casting. When they remembered that there were about 60,000,000 tons of steel made annually by the allied powers they realized the importance of saving 5 or 10 per cent of the metal. It was worth an attempt to place the matter on a scientific basis. He would like to see an international investigation into the subject, because he was convinced that they were melting over unnecessarily large quantities of steel. That was important not only from the steel but from the fuel point of view. He believed millions of tons of steel could be saved. Personally, he had succeeded in getting out of 100-ton ingots 90 per cent of sound billets. He believed that could be done generally if the matter were taken up thoroughly.

Isaac Lester and others complimented the author on his paper as a most useful contribution. Mr. Lester was convinced that much more needed to be known about gases.

Utilization of Waste Heat from Open Hearths

IN the course of a brief discussion of this paper by Thos. Mackenzie Dr. J. S. Unger said he was impressed with the necessity which seemed to be growing of utilizing waste heat. In this matter English and continental practice differed from that of America where they did not make any efforts to utilize waste heat, though there were isolated installations in connection with basic open-hearth furnaces. Owing to the shortage of natural gas in some localities they were compelled to use powdered coal, which called for much stronger draught. American practice utilized more water cooling. They had water-cooler parts, doors and door frames and buckstays. He thought the time was coming when furnaces would consist of steel boxes, with a water jacket on the outside with just enough brick on the inside to prevent burning. Mr. Saniter thought they would want more justification for the capital expenditure before accepting and acting upon the author's conclusions.

Some New Rules for Coal Conservation

At this time when coal conservation is an absolute necessity and every practical suggestion toward saving the supply is a shot at Germany, everyone realizes that smoke issuing from boiler stacks represents unused heat units. The loss of these heat units can be materially decreased, if certain simple rules suggested by the combustion engineers of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., are observed.

The rules follow:

1. Give your fireman an opportunity to acquire the fundamental principles of fuel burning.
2. If you have a difficult fuel problem, consult a combustion engineer.
3. Prevent smoke by proper firing methods.
4. Use gages to indicate the condition of the fire bed at all times.
5. Carbon-dioxide gas is the principle product of the complete combustion of coal. Ten to 12 per cent should be obtained in flue gases.
6. Avoid loss due to unburned coal in the ash.
7. Do not waste steam.
8. Do not permit grates to clog.
9. Inspect the baffles in boilers as leaky baffles increase the flue gas temperature.
10. Avoid the leaking in of cold air around the boiler setting.
11. Install stokers.
12. Clean scale from tubes.
13. Avoid soot formation. All boiler tubes should be blown externally every eight hours.
14. Smoke flues should be as short and straight as possible, and should be made air tight.
15. Locate flue dampers in front of boilers, so that they may easily be adjusted.
16. The size of coal has much to do with the capacity and efficiency of boilers. The air pressure penetrates the fuel bed formed by coarse coal easier than that formed by finer coal.
17. Keep the heating surfaces of the boilers free from soot, etc.
18. Keep the fires level and free from holes.
19. Do not carry the fires so thin as to draw excess air through.
20. Do not carry the fires so thick as to have incomplete combustion of the fuel.
21. Do not soak the coal with water before firing.
22. Be sure the blow-off valves do not leak.
23. Do not have the safety valve continually popping off.
24. Cover steam pipes.
25. Do not waste steam through leaky valves or traps.
26. Never use live steam if exhaust steam is available.

Cleaning Foundry Air Electrically

Two Sets of Electrodes Employed in Cottrell Process, Foreign Matter Being Charged With Static Electricity and Deposited on Collecting Electrodes

BY H. D. EGBERT

IN copper, lead and zinc smelters and refineries and in chemical works the Cottrell electrical precipitation processes have been recognized for several years and are well established as a standard means for removing finely divided particles of material such as dust, fume, acid mists, etc., from gases. It is only more recently, however, that the use of these processes has been seriously considered as applied to the solution of the dust problems which are present in nearly every manufacturing establishment where grinding, buffing, polishing, sand-blasting or metal cleaning form a part of the operations.

The dust-handling problems connected with sand-blasting and tumbling-barrel operations in iron foundries have long presented many points of difficulty, and it is therefore but natural that interest should have been aroused in the possible application of electrical precipitation to their solution. Already considerable thought has been given and much work done toward adapting the Cottrell processes to this particular field and the results to date are most promising. This paper proposes to deal with the Cottrell processes, with particular reference to their application to foundry dust problems. A description will be given of a typical installation designed to clean the dusty air coming from tumbling barrels in an iron foundry.

From a paper presented at the annual meeting of American Foundrymen's association, Milwaukee, Oct. 7-11. The author, H. D. Egbert, is associated with The Research Corp., New York.

Before proceeding, however, to a discussion of what has been done in this particular field with the Cottrell processes, a brief explanation of the fundamental principles underlying the electrical precipitation processes will undoubtedly be of interest and will further serve to make clear the terms used in the descriptions given in this paper.

Electrical Precipitation Principles

A body highly charged with electricity and so shaped as to facilitate the silent discharge through the surrounding air of some of the electrical energy with which it is supplied, will impart an electric charge of the same sign (i. e., negative or positive as the case may be) to any particles of matter which may be in its immediate vicinity. As bodies charged with electricity of the same sign repel each other, all such particles will, if free to move, be violently repelled from the fixed charged body to which the electrical energy is being supplied. This is the principle made use of in electrical precipitation.

The essential elements of a precipitator are two sets of electrodes. One set, known as the discharge electrodes, are of such form as to facilitate an electric discharge from their surface, as for instance a wire, a light chain or a strip of metal having relatively sharp edges, while the other set, known as the collecting electrodes, are of such shape as to prevent as far as possible any discharge from their surfaces, as for instance a flat plate or a pipe with a smooth interior surface.

These electrodes are so arranged in the precipitator that the different types oppose each other and between them a silent or glow discharge is maintained by supplying to the discharge electrode electrical energy of a unidirectional character and at a relatively high voltage. In practice the collecting electrodes are grounded for reasons of convenience and safety, the ground being used as the return portion of the circuit. A typical form of precipitator, for example, consists of a grounded pipe along the central axis of which is suspended a wire connected to a source of unidirectional high voltage electric power.

The air or other gas carrying the suspended liquid or solid particles which are to be removed is passed between the discharge and collecting electrodes. During passage the particles of suspended matter are charged and are driven away from the discharge electrode and over to the collecting electrode, upon which they are deposited. The air or other gases are unaffected and are free to pass on out of the precipitating chamber.

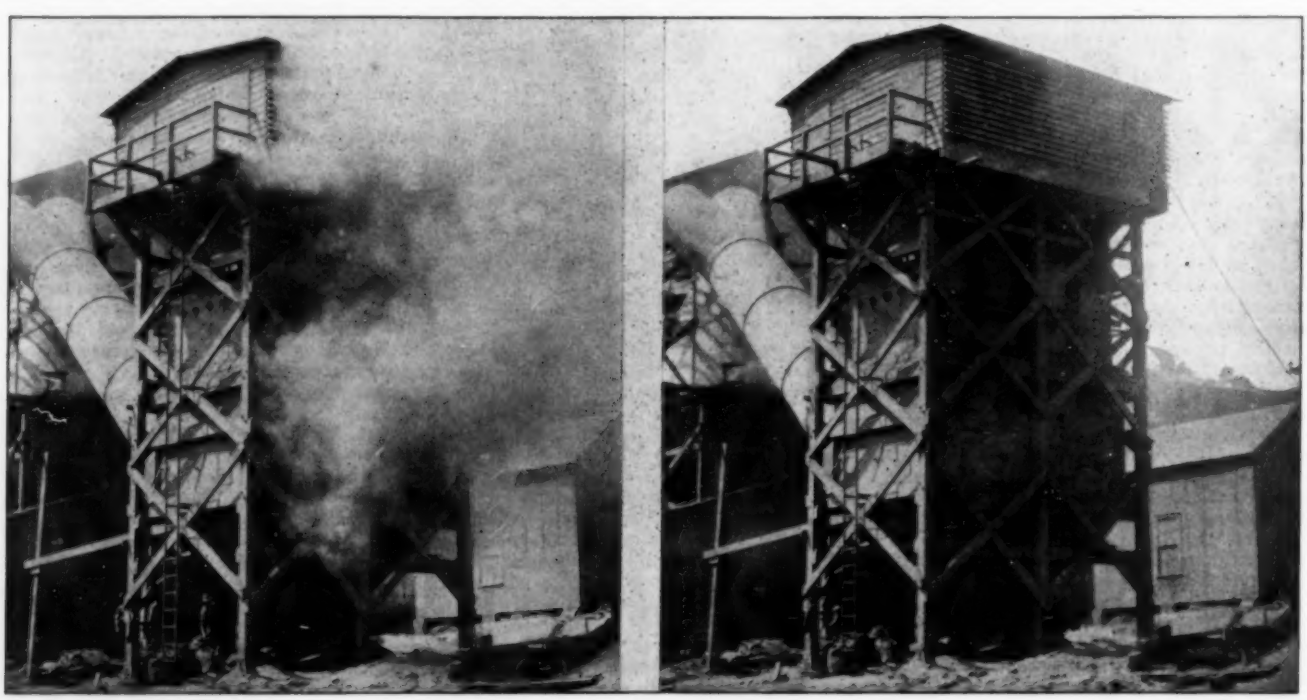


FIG. 1—COTTRELL PRECIPITATOR TREATING AIR FROM SLATE ROCK CRUSHERS—CURRENT OFF. FIG. 2—COTTRELL PRECIPITATOR TREATING AIR FROM SLATE ROCK CRUSHERS—CURRENT ON

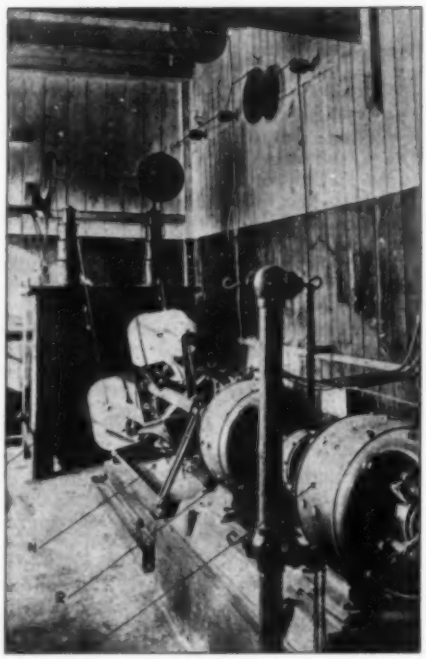


FIG. 3—SET OF ELECTRICAL EQUIPMENT FOR USE WITH ELECTRICAL PRECIPITATION INSTALLATION

It will be evident on slight reflection why high potential alternating current is not used to produce the precipitating effect. This is due to the fact that in such cases the charge on the electrodes rapidly alternates in sign and the particles of matter are alternately repelled and attracted by the discharge electrode and consequently tend to remain suspended in the gas. Alternating current does have an agglomerating effect on the particles, which is particularly noticeable when these particles are liquid in their nature.

If the interior of the precipitator is darkened a glow will be observed emanating from the discharge electrodes, while they are connected to the source of high voltage electrical power.

This glow is known as the corona and is an evidence of the intense ionization of the air or other gases surrounding the electrode. For any given gas there is in all cases a rather definite voltage at which a visible corona begins to form depending upon the character of the discharge electrode and the distance or gap space between it and the collecting electrode. The shorter the distance between the electrodes and the smaller the wire or chain used as a discharge electrode, the lower the voltage at which a visible corona will begin to form.

It has been found that the most effective precipitating action is obtained when the potential difference between the electrodes is sufficient to produce a corona discharge and when the discharge electrode is charged negatively rather than positively. The difference in the appearance of the corona when the discharge electrode wire is positively charged and when it is negatively charged is quite marked and when once observed is always easily recognizable. When the wire is positive the corona is seen as a more or less uniform and intense purple glow surrounding the wire. When negative the corona appears as a series of brilliant points of purplish light spaced at rather regular intervals along the wire.

The voltage employed in a given precipitator depends upon the size and type of discharge electrode used, the gap distance between the discharge and collecting electrodes and the temperature and other characteristics of the gas being treated. There is a definite relation between the velocity of the gases through the precipitator and the length of the path between the electrodes, in other words the particles must be under the influence of the electric field for a suitable period of time to secure satisfactory removal of these particles from the gases. The length of this period depends to a considerable extent upon the character of the particles to be precipitated. If the particles are fluffy in character, light, dry and finely divided a longer time will be required than if they are relatively heavy or coarse or of a liquid or sticky nature. The length or height of the precipitator is, of course, limited by considerations of practicability and cost and consequently there is in every case a definite limit to the gas velocity through the precipitator at which complete removal of the suspended particles can be accomplished.

In practice it is common to use collecting electrode pipes ranging from 6 to 12 inches in diameter and from 6 to 15 feet in length, and gas velocities ranging from 6 to 15 feet per second, depending upon the factors just mentioned. It is usual to construct the precipitation installation in sections or units. Such an arrangement may cost somewhat more than a single unit or section, but it has the advantage of allowing considerable flexibility in the operation of the precipitator and permits of a closing down of a portion of the installation for repairs or cleaning without involving the removal of the entire precipitator from service. When the volume of air or gas to be treated is liable to vary at different periods of time this sectional arrangement of the installation has the further advantage of permitting a saving in power by shutting down certain sections of the precipitator at those times when the maximum gas volume does not have to be cleaned.

If the collected material is liquid in nature it will, of course, trickle down the surface of the collecting electrodes and will drop into a suitable container provided for the purpose beneath the precipitator. In such cases the precipitator is self-cleansing. If the collected material is dry or at all sticky in nature it is often necessary to dislodge it from the electrodes by mechanical means. Usually the cleaning is accomplished by striking or rapping the pipes or plates whereupon the collected material falls into hoppers placed beneath the precipitator to receive it. In some cases it is also necessary to clean the discharge electrodes occasionally, and when such a condition is anticipated provision is also made for rapping the framework which supports the high tension or discharge electrodes.

The power consumption of an electrical precipitator is governed by the number of electrodes and their length, type and size, as well as by the characteristics of the gases to be cleaned as regards temperature, conductivity, etc. The power consumption, however, is in no cases excessive and is usually quite small. For example, a precipitator for cleaning 10,000 cubic feet of gas or air per minute will usually require no more than 7 to 10 kilowatts.

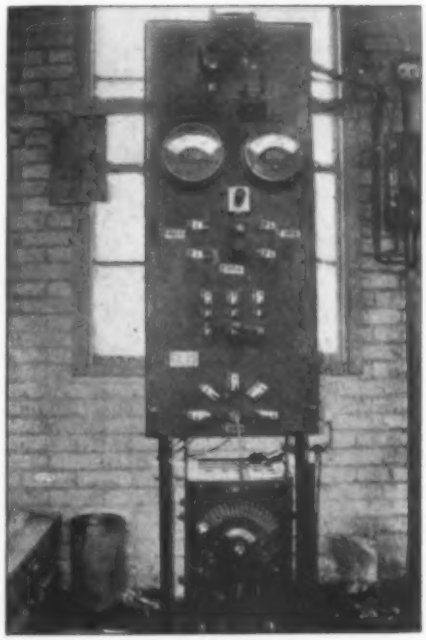


FIG. 4—SINGLE-PANEL SWITCHBOARD FOR USE WITH ELECTRICAL PRECIPITATION INSTALLATION

A short description of the method commonly used to obtain the high potential unidirectional current required by the precipitator will doubtless be of interest. This equipment is, of course, more or less special in its nature and is particularly designed for use in precipitation work. Care must be taken in each case to choose equipment of the proper size and type for each particular installation.

If a low tension alternating current of any commercial frequency is available at the plant in which the precipitator is installed, all that is required in the way of electrical equipment is a transformer of proper capacity for stepping up the low tension electric current to the required voltage for use in the precipitator; a rectifier for changing the high voltage alternating current into high voltage unidirectional current and a small switchboard panel with the necessary instruments, circuit breaker, rheostat, etc., mounted upon it. A 2 to 3-horsepower synchronous motor is also required for driving the rectifier in synchronism with the alternating current supply.

If only direct current is available at the plant in question it is necessary to install a small motor-generator set for the purpose of producing the low tension alternating current. The remainder of the equipment is the same as in the previous case, with the exception that the rectifier instead of being provided with a separate synchronous driving motor is driven by the motor-generator set and direct-

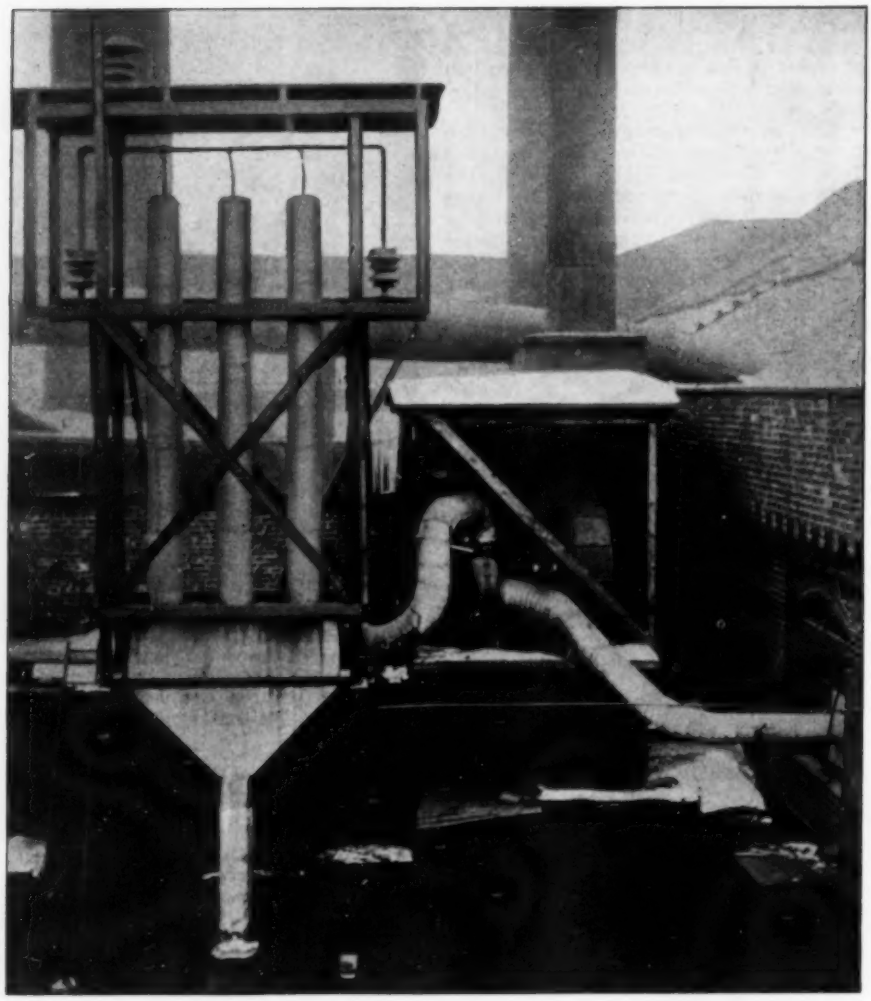


FIG. 5—TEST PRECIPITATOR TREATING AIR DRAWN FROM FOUNDRY TUMBLING BARRELS

ly connected to it by means of a flexible coupling.

Fig. 3 shows a typical set of electrical equipment for use with a Cottrell precipitation installation. This apparatus consists of a motor-generator set, rectifier, transformer and switchboard panel. As mentioned, in case a steady supply of alternating current is available at the plant a small synchronous motor can be substituted for the motor-generator set here shown, thus reducing considerably the cost of the electrical equipment.

Fig. 4 shows a typical single-panel switchboard for use with a single set of electrical equipment such as is employed with a moderate size installation of the Cottrell processes. At the top of the switchboard will be seen a circuit breaker which operates to disconnect the synchronous motor if short circuits occur anywhere in the precipitator or in other portions of the high tension or low tension circuits. Beneath the circuit breaker will be seen the ammeter and voltmeter which are connected in the low tension circuit of the transformer. Below these meters is a switch, also in the low tension circuit to the transformer, which permits disconnecting the primary windings of the transformer from the power supply circuit. Below this switch on the board is a multiple-point switch which connects the various taps brought out on the primary or low tension side of the transformer. By changing the position of this switch the secondary voltage delivered by the transformer may be varied at will within certain fixed limits.

Several months ago an exhaustive series of tests were made with the Cottrell processes on dust laden air drawn from tumbling barrels in a large iron foundry near New York city. These tests demonstrated that an electrical precipitator could successfully remove and collect all the dust carried by the air from these tumbling barrels under various conditions of operation.

Fig. 5 is an illustration of the precipitator which was installed in connection with these tests. The collecting electrodes consist of three sheet-iron pipes 12 inches in diameter and 12 feet long erected on a bottom header box provided with a hopper and spout for the removal of the collected material. For discharge electrodes, No. 10 jack chain was used suspended along the vertical axis of each pipe. The dust laden air was drawn from the tumbling barrels used in the tests by means of a motor-driven centrifugal fan located near the precipitator, as shown in the illustration.

It was found that this precipitator could clean the air drawn from three tumbling barrels, the fan being operated so as to maintain a suction head of 2¾ to 3 inches on each barrel. For the particular conditions met with at the plant in question this suction head on the tumbling barrels seemed to give best results both as regards the time required for tumbling and the satisfactory cleaning of the castings. The volume of air handled by the test precipitator under these conditions averaged about 1100 cubic feet per minute at a temperature of 63 degrees Fahr. so that each pipe was cleaning approximately 366 cubic feet of air per minute.

Fig. 6 gives in plan and section a diagrammatic layout of the test precipitator and its connections to the tumbling barrels.

Tests of Dust Flow

During the tests measurements were made to show the amount of dust coming from the barrels at various times in the cycle of operation. It is interesting to note that practically 65 per cent of the dust was caught in the first half hour following the starting up of the tumbling barrels on a new batch of castings. Thereafter the amount of dust carried in suspension in the gas dropped off rapidly until after one hour the dust content became practically constant and remained nearly so until the end of the tumbling period.

Based on the results obtained from these tests a precipitation installation to clean approximately 22,000 cubic feet of gas per minute has been designed. The precipitator consists of three sections or units, each with 36 collecting electrode pipes or tubes 8 inches in diameter and 15 feet in height. The recent tendency in electrical precipitation work has been toward collecting electrode tubes of smaller diameter, as it has been found that with the smaller pipes somewhat better efficiency with a lower operating voltage can be obtained. In the present design, therefore, collecting electrode tubes 8 inches in diameter rather than 12 inches have been employed, and the operating voltage will be approximately 65,000 to 70,000 volts.

To secure uniform distribution of the dusty air among the several collecting electrode pipes, the air is admitted some distance above the bottom of the pipes so that it passes down around these and then up between the electrodes and so into the top header, whence it is discharged to the open air.

The collecting electrode pipes are of No. 16 gage sheet steel while the supporting structure as well as the bottom and top headers and hoppers are timber. One set of electrical equipment is provided to furnish the current for all three precipitator sections. This set, which is to operate on a 440-volt, 3-phase, 60-cycle power line will consist of a 25-kilovolt-ampere transformer having a maximum secondary voltage of 75,000 volts; a mechanical rectifier driven by a 3-horsepower, 3-phase, 1800 revolutions per minute synchronous motor, a switchboard with the necessary instruments, circuit breaker, rheostat, switches, etc. It is estimated that the entire installation as shown, exclusive of any engineering or license fee, will cost in the neigh-

borhood of $11,000, exclusive of the cost of any flue connections from the exhauster to the precipitator.

Rapping hammers or knockers can be arranged to operate automatically through a motor-driven mechanism, or as is more usually the case, they can be operated by hand, especially if the intervals between the rapping periods are not too short.

Figs. 1 and 2 illustrate graphically what the Cottrell processes can accomplish in the way of dust collection. The precipitator shown handles air drawn from slate rock grinders or crushers at a plant in Vermont. Fig. 1 shows the precipitator with the electric current turned off, while Fig. 2 shows the same precipitator after the current has been turned on. The heavy dust content of the air which the precipitator is obliged to clean is well shown by the clouds of dust coming out of the top header of the precipitator in Fig. 1, when the installation is not in operation, and the effective cleaning of the air is clearly shown by Fig. 2. This precipitator handles some 35,000 cubic feet of gas per minute, and has been in continuous operation for nearly three years. This installation has recently been enlarged and will shortly be handling a total of nearly 100,000 cubic feet of air per minute.

For the Cottrell processes of electrical precipitation several advantages are claimed which make them particularly adaptable for dust cleaning work in factories and foundries. In the first place, the dust can be collected satisfactorily, no matter in how finely a divided state it may be. Secondly, the danger of fire can be eliminated, since the precipitator can, if so desired, be built entirely of sheet metal. Likewise the gases can be treated at any temperature of to 1000 degrees Fahr.

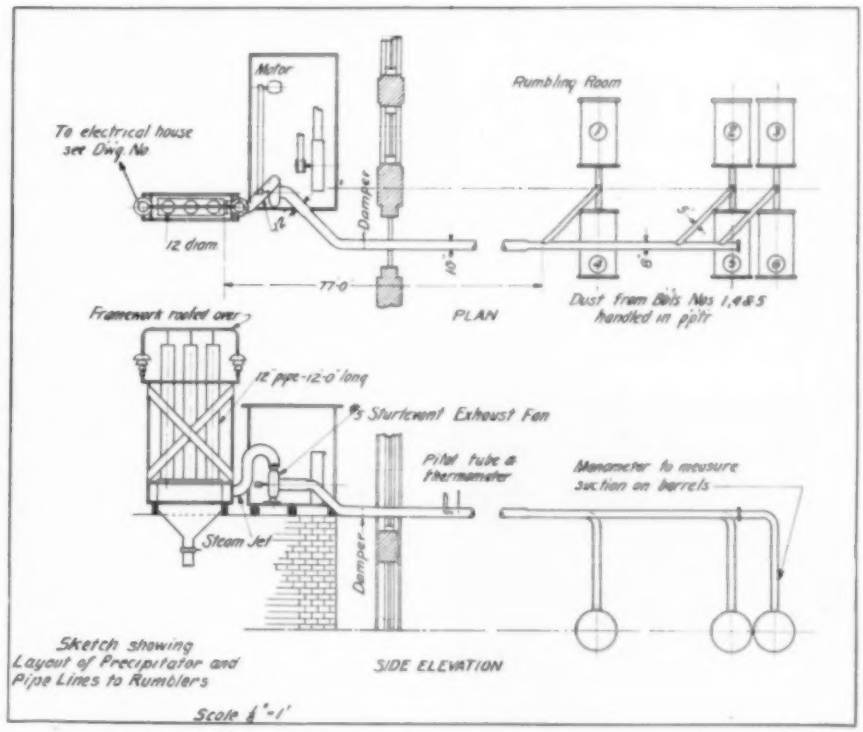


FIG. 6—ARRANGEMENT OF TEST INSTALLATION TO TREAT AIR FROM FOUNDRY TUMBLING BARRELS

America Independent of German Potash

SO certain are government authorities of the ability of this country to furnish its own potash requirements, largely through the smelting of iron ore, that Secretary of the Interior Franklin K. Lane last week, made the following unequivocal statement:

"The United States does not need German potash. Germany has thought all along, and still thinks, no doubt, that she has a whiphand over America because of her supply of this material, but America can in two years become entirely independent of Germany in this regard by the development of her own deposits and the use of processes devised by Dr. Frederick Cottrell, now the chief metallurgist of the bureau of mines."

When the war started this country, having had nearly 250,000 tons of potash from Germany each year, suddenly found herself cut off from this important fertilizer material. That constituted a call to American science to get busy, and soon this country was producing potash from the brine lakes of California, Nebraska, and other states; from the kelp, the sea weed of the Pacific coast and from various minerals. The scarcity of potash boosted the price and new industries found the production profitable.

Production as yet is not nearly up to the demand although growing rapidly. The answer to the situation is the output that will come from iron ore smelted in blast furnaces, especially the Cambrian ores in Alabama. Happily they are located in the southern section of the country, which consumes about 80 per cent of the potash requirements of the United States.

Discovery By Chance

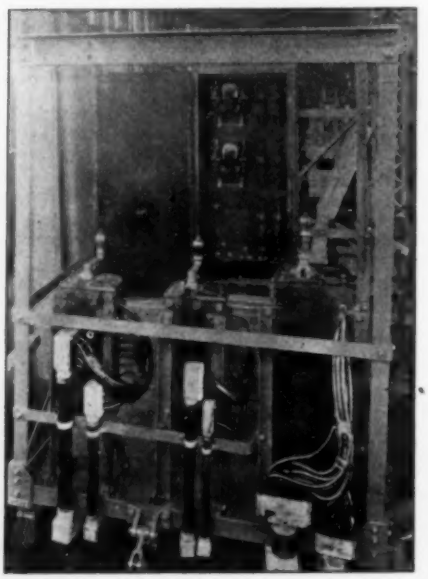
The romance of American science has come in to round out an industry that may be of the greatest importance. Several years ago, Dr. Cottrell sought some device that would stop the poisonous fumes from lead, copper, and other smelters in the far west that were destroying vegetation. This device was not only successful with the smelters, but a cement company in California, in dire distress from the dust fumes that were ruining a profitable fruit growing country, took the chance that something that would stop smelter fumes might arrest the cement dust and put an end to the costly litigation with the farmers. The dust was caught and it proved to be potash, so much potash that the cement company with the outbreak of the war made potash its chief and cement its secondary product. The idea spread until now the experts are figuring that the yearly possible output from existing cement mills as a by-product will soon equal 100,000 tons. Another cement company in Maryland that caught the spirit early, in 1917, after fully amortizing its plant, cleared $200,000 from potash alone and this year the profits will be $500,000. This, of course, is with potash at the present high selling price.

The next and greatest development remained to be effected. It relates to the possibilities of production from the blast furnace. Engineers gathered the idea that the device for stopping smelter fumes might also be applied to the blast furnaces of the country. An experimental installation was made at the plant of the Bethlehem Steel Co., South Bethlehem, Pa., and from the gases and dusts were obtained a goodly quantity of potash, which was being sold profitably. A larger commercial installation was planned, the erection of which is now being held up by the pressure of other government work. The recovery of potash at the Bethlehem works was fully discussed in an exhaustive and extremely able paper on "Potash as a By-Product from the Blast Furnace," by R. J. Wysor, superintendent of the blast furnaces of the Bethlehem company, at the meeting in New York in February, 1917, of the American Institute of Mining Engineers. This paper appeared in THE IRON TRADE REVIEW of Jan. 18 and 25, 1917.

Southern Ores Best Suited

Success met by the Bethlehem company was largely responsible for experts having immediately gone deeper in the possibilities of the production of potash from blast furnaces. An analysis of the materials entering into blast furnaces was made, with the conclusion that the best iron ores for

producing potash were found in the south, whose requirements of 80 per cent of the potash consumption of the country, go largely for the great cotton crops. These ores were found in Alabama in large tonnages and contain an average of 2 per cent of potash, which, it is understood, is equal to from six to nine times the potash content obtainable from Lake Superior and other iron ores of the United States. A large blast furnace, smelting these ores of Alabama, would yield from 5000 to 7000 tons of potash each year as a by-product, and estimating that all of the 45 furnaces in that state were smelting these ores,



PROTECTIVE PANEL FOR CRANE CABS

their total potash output would be approximately 250,000 tons of potash annually, and would meet fully the requirements of the country. This of course is mentioned as an illustration rather than a practical example because operation of all of the furnaces at the same time is not in line with practice. It could be assumed also that the 60,000,000 or more tons of Lake Superior ore consumed annually, to say nothing of the other ores used in the blast furnaces of this country, both domestic and imported, contain one-sixth the quantity of potash that the Alabama ores do. This would afford an annual output of potash that might be roughly estimated at 500,000 tons, which would not only mean that this country would be self-contained with regard to its potash supplies from blast furnaces alone, but would be a competitor of Germany. There are authorities who think this is much more of a probability than has been imagined. Great Britain also is reaching a point where she is recovering potash from her blast furnaces, and will probably be self-contained, as will other industrial nations where large quantities of ores are smelted. It also is reported that a large deposit of potash has been discovered in Canada.

The Duke Steel Co., recently organized and incorporated in the state of New York for $15,000, has just opened a warehouse at 191 Pearl street, New York City.

Safety Control for Cranes

A protective panel for crane cabs which takes the place of various circuit breakers, knife switches, fuses, etc., has been brought out by the Cutler-Hammer Mfg. Co., Milwaukee. Overload protection is provided for each motor supplied through the panel. The control of the latter is obtained through a push-button station. The control circuit is so arranged that one clapper switch is closed when the "start" button is depressed and the other when the "start" button is released. In case an overload or ground condition remains the first switch closed would be opened when the second switch is closed, thus obtaining the "nonclosing on overload" feature.

To start the crane the operator depresses the "start" button for an instant before manipulating the motor controllers. If he wishes to inspect any motor, or leave the crane temporarily in an inoperative condition, he can withdraw the safety plug and take it with him.

Automatic Chucking Machine

With the object of providing an easily operated automatic machine for making a variety of machine parts, only semiskilled labor being employed, the machine shown in the accompanying illustration was recently developed. It is the invention of Lee G. Daniels and David Sundstrand, both of Rockford, Ill., and is being manufactured by the McDonough Mfg. Co., Eau Claire, Wis. In principle, the machine resembles the modern manufacturing automatic of the type having several working stations and one loading station. As the illustration shows, the machine is of the vertical type, the object of this design being to facilitate loading and unloading.

The machine handles work from 3 to 6 inches in diameter and performs the following operations: Cup turning, drilling, boring, reaming, facing, tapping with collapsible taps and drilling multiple offset holes by means of an attached multiple-spindle auxiliary head to any of the spindles.

The machine has five tool carrying spindles and a blank station. The turret, upon which the spindles are mounted does not revolve but through its automatically controlled vertical movement, feeds the tools to the work. Its axis is concentric with that of the table.

After the spindles perform their different operations, a finished piece is removed when it is at the blank station and another blank substituted. The time of machining a given piece is the time of the longest operation plus the time of one index.

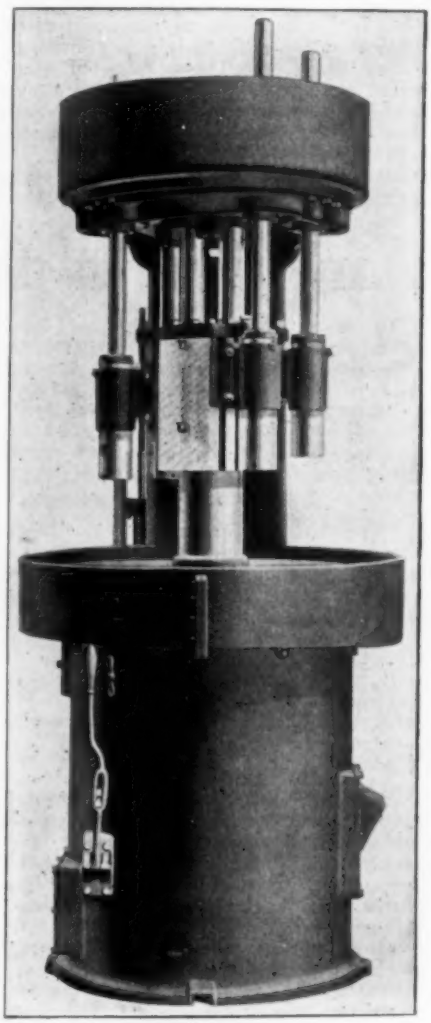
The table has six chucking positions and revolves step by step, bringing each chucking position successively in alignment with each spindle.

On one machine now in operation, machined pieces are turned out, it is said, at the rate of one every two minutes. Three machines which were previously required for machining the parts, have been eliminated and three operators released for other work.

The spindles have a rapid approach toward and a rapid reverse from the work. The spindle carrier is operated by means of a quadruple screw operating through a bronze nut in the center column. The screw is revolved by means of a worm gear and the worm by means of three friction clutches, one for a rapid approach, one for the feed and one for a rapid reverse. In obtaining these movements through friction clutches, the machine is protected because if a tool should break and jam in the work, the feed pressure would go up and cause the feed friction to slip, thus automatically protecting the machine. If in the movements of the rapid approach or reverse or indexing of the table, any of these should jam into anything, their friction clutches would slip.

The table is 36 inches in diameter and can accommodate six 10-inch chucks or work holders. The travel of the spindle carrier is 13 inches and it takes 4 inches of this movement to withdraw the locating pin and to control the indexing of the table. The table can be set to index one, two or three spaces, depending upon the operations required.

The speeds are varied by means of change gears. There is one set that



MACHINE DESIGNED ON VERTICAL LINES TO FACILITATE CHUCKING

controls the speed of all the spindles and each spindle also has an individual set of change gears, so that each can be given the most efficient speed for any particular operation.

Increases Strip Steel Capacity

Additional Units in the Hot and Cold-Rolled Strip Department of the Weirton Steel Co. Have Been Placed in Operation—Mills Are Electrically Driven—Description of Plant

LITTLE did the kaiser think that America could export steel in such vast quantities to European soil; not only export it, but deliver it to Germany's backdoor with the aid of guns. That America is able to transport with such rapidity is due to a certain extent to the cooperation of strip-steel makers. They are producing thousands of tons of strip steel for war purposes. The important part which this material is playing will probably not be known until after the war. The product from the hot strip mills is used for making boiler tubes for the Emergency Fleet corporation, trench mortars and motor truck parts. Commercially it is used for manufacturing door hangers, metal beds, stove parts, auto side braces, and for dieing and stamping purposes.

Among the companies to realize the importance of strip steel production is the Weirton Steel Co., Weirton, W. Va., which prior to Aug. 1, 1918, was known as the Phillips Sheet & Tin Plate Co. The company in 1913 operated 18 cold-rolled strip mills. Twenty-two additional units were installed in 1917. Construction of a 16-inch hot strip mill was completed Dec. 23, 1916 and of a 10-inch hot mill in May, 1918. Billets and slabs are brought to the storage yard in cars over a depressed spur. The billets are 4 x 4 inches; the slabs vary in width from 6 to 16 inches. Thousands of tons of steel can be stored in this yard which is 80 feet wide and 380 feet long.

Electric Magnets Used

The billets and slabs are received in railroad cars which are switched inside the storage yard. The latter is shown in Fig. 5. The material is unloaded and piled by electric magnets attached to the cranes, one of which is equipped with a 42-inch magnet and the other with a 54-inch magnet. The cranes were built by the Pawling & Harnischfeger Co., Milwaukee, and operate on overhead tracks which are supported by heavy steel columns. These are spaced equidistant so that the maximum factor of safety is obtained when both cranes are operating simultaneously.

Previously to being converted into strip steel, the billets are heated in an automatic gravity discharge furnace. Two furnaces are provided, each having a capacity of 480 tons per 24 hours. They were designed by Alex Laughlin & Co., Pittsburgh, and are equipped with water-cooled skid plates at the discharge end. They are heated with producer gas which before being passed into the furnace, is mixed with air to give it the proper combustible properties. The air is supplied by a centrifugal fan which is driven at 975 revolutions per minute by a Westinghouse motor.

When billets are to be converted into strip steel they are transferred from the stock pile by one of the magnets to a rail-type table located immediately in front of the charging door. At the outer end of this table

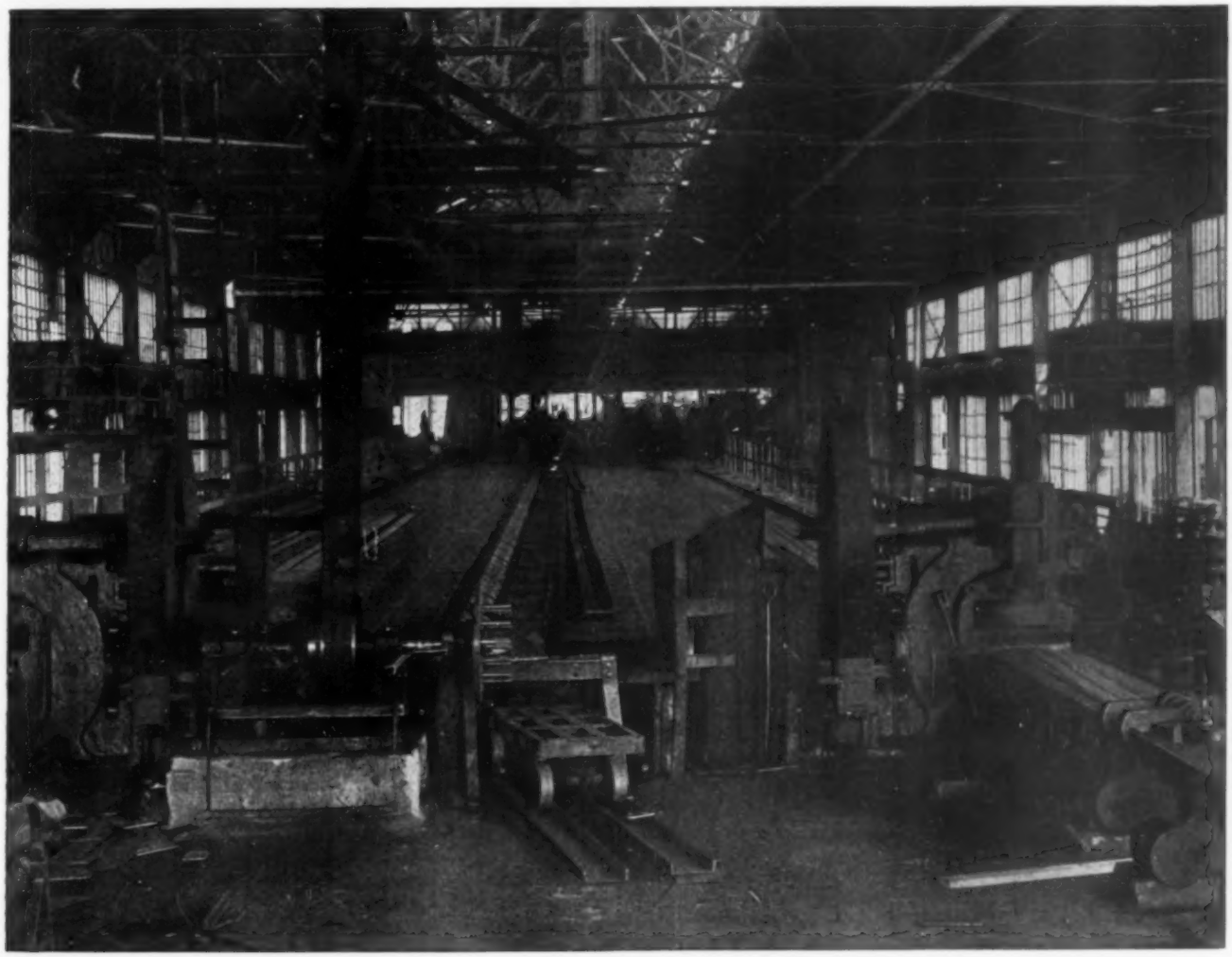
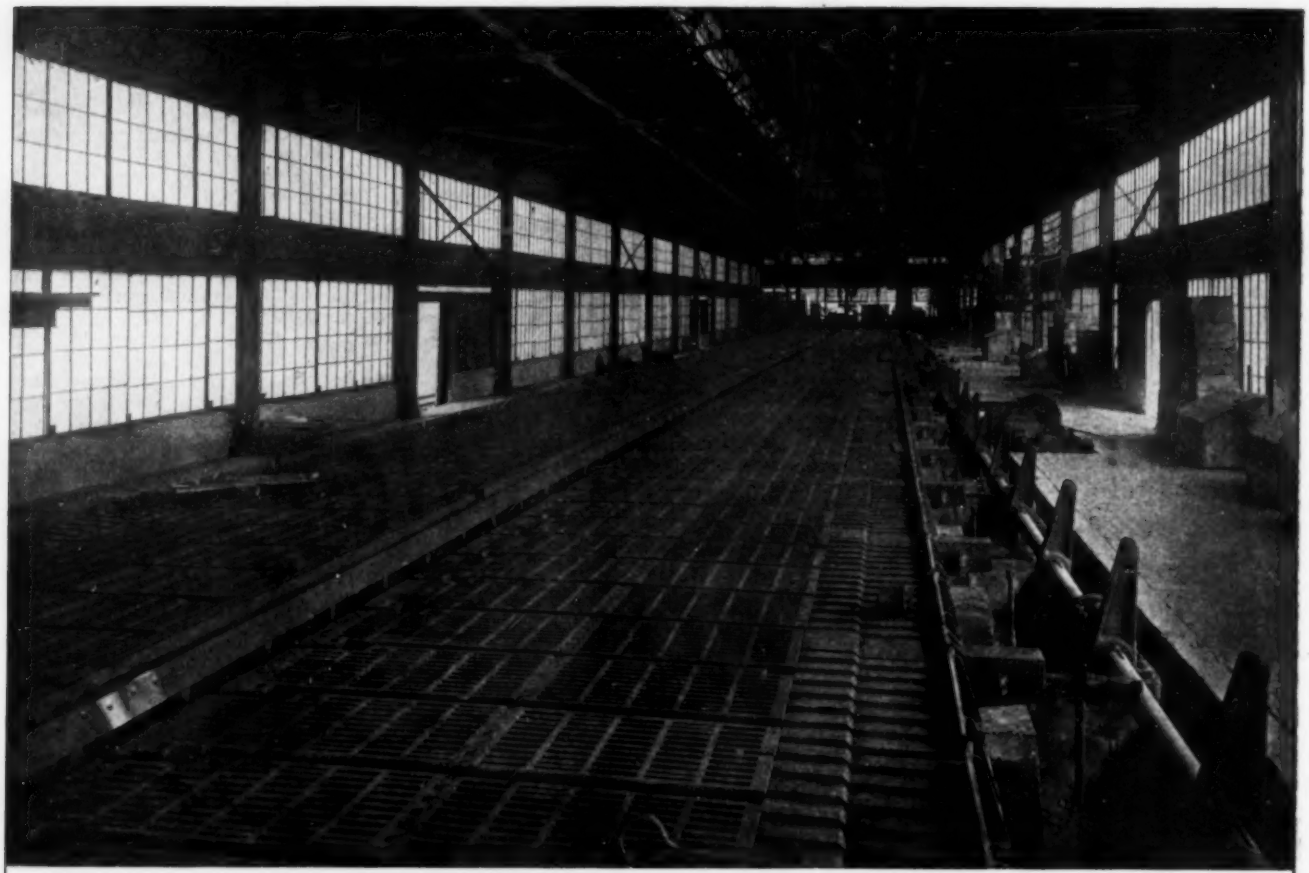


FIG. 1—STRIPS COMING FROM THE 16-INCH MILL ARE EITHER SHEARED INTO SHORT LENGTHS, COILED, OR SHIPPED AS ORIGINALLY ROLLED



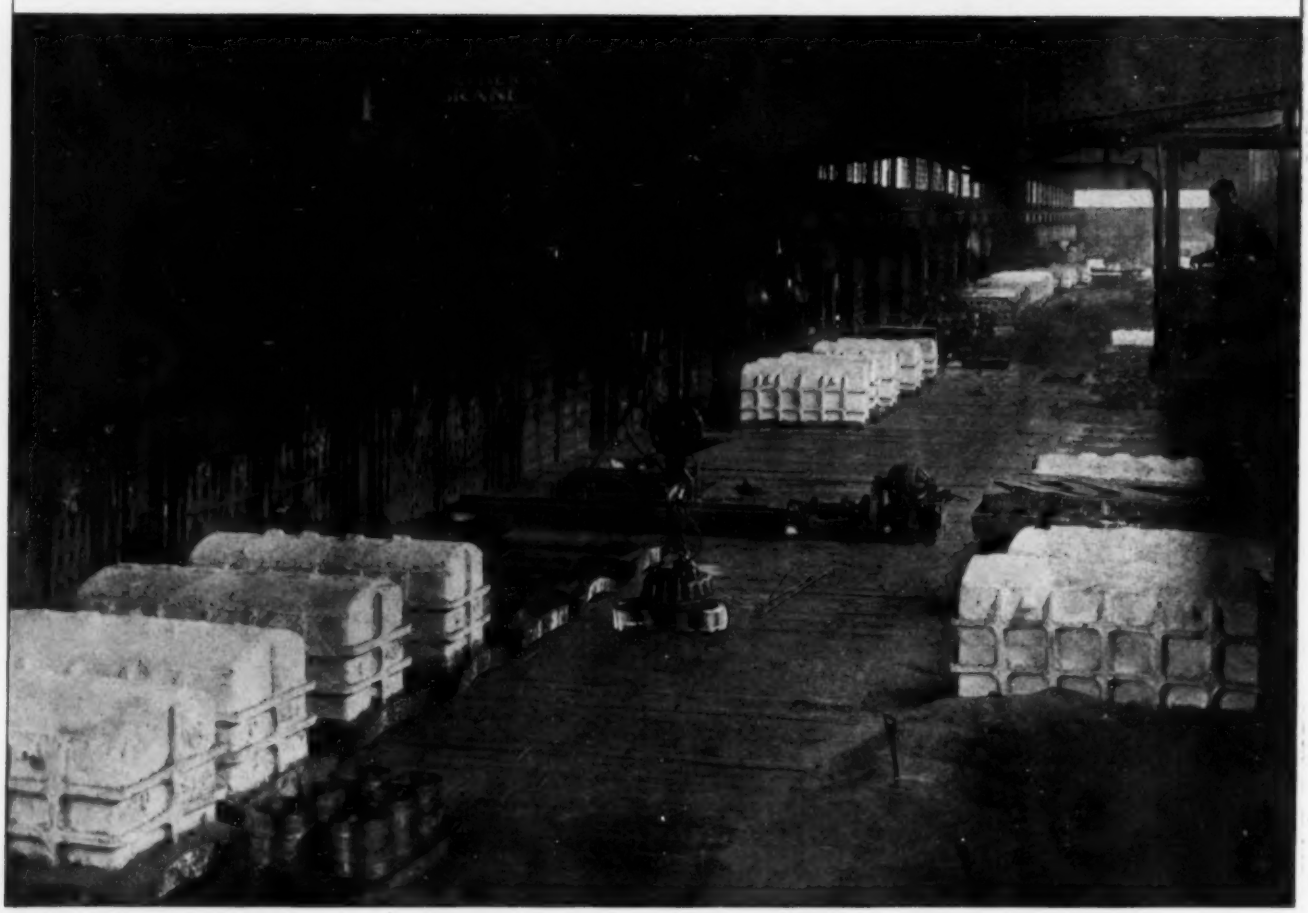


FIG. 2—HOT BED OF THE 10-INCH MILL IS 300 x 20 FEET AND IS BUILT WITH THE RUN-OUT TABLE CENTRALLY LOCATED. FIG. 3—ANNEALING DEPARTMENT IS EQUIPPED WITH 14 DOUBLE GAS-FIRED FURNACES, EACH HAVING A HOLDING CAPACITY OF 60,000 POUNDS OF STEEL

is a pusher driven by a 40-horsepower motor. This pusher is of the double-arm type and shoves the billets into the furnace one at a time. As a billet enters the furnace it pushes the line of heated billets forward and causes the one nearest the discharge end to drop on to the skid plates which deliver it to an approach table. The rate of travel through the furnace is so regulated that the billet is brought to the desired temperature for rolling just before being discharged from the furnace. Up to this stage of conversion, the billets are heated as outlined, whether they are to be rolled on the 16-inch or the 10-inch hot-strip mill.

Roughing Mill Practice

The approach table leading to the 16-inch mill is equipped with rollers having four edges. These rollers keep the billet in a horizontal position and convey it directly ahead to the 6-stand roughing mill. The practice of the Weirton company is to send the billet through the mill without cropping the ends. The first stage of breaking down the billet is accomplished by passing it through two stands of edger rolls arranged horizontally. The billet is then given three flat passes through individual sets of rolls designed for this purpose. Upon issuing from the last set of these rolls the edges of the partially broken-down billet are uneven. To remedy this condition, the flattened billet is guided into a pair of edger rolls arranged in a vertical position. The roll stands of the roughing mill are not arranged in tandem, but are placed in a staggered position which conserves space in the mill building. The mill is equipped with the necessary runout and transfer tables and edge rollers. The 16-inch roughing mill is driven by a 1500-horsepower, 6600-volt, constant-speed motor. The latter operates at 505 revolutions per minute.

After the rolling of the billet in the roughing mill is completed, the long drawn-out piece of steel has only to go through one more process of rolling before it becomes the finished product—hot-strip steel. The final rolling is done on the finishing mill which at this plant consists of two sets of duo-stands of rolls and one set of finishing rolls. The two stands of duo rolls are driven by a 2500-horsepower, alternating-current motor. The finishing rolls are driven by a 1080-horsepower, direct-current motor, equipped with a rotor converter for speed regulation. Both motors were built by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. From the finishing mill the strip steel is delivered straight ahead to a runout table, 250 feet long. The 16-inch mill has a capacity of approximately 7000 tons a month.

Shearing the Strips

On both sides of the runout table are hot beds. These are equipped with straight-edge, agitating bars which pull the strips in their turn over to a shear-approach table. The latter is located on the outer side of each cooling bed and directs the strips toward electrically operated shears built by the United Engineering & Foundry Co., Pittsburgh. The cooling bed and shears are shown in Fig. 1. The end of the strip is cropped. If the strip is of heavy gage, it is moved forward between the knife blades until it strikes a gage lug. This is securely bolted to the shear back-table at such a distance from the shear blades that the strip steel can be cut in multiples without individual measurements having to be made each time. If the strip is of light gage it is usually shipped to the consumer in coils. When this is the case the strip, after having the fish-trail end cropped, is attached to a reel and the latter is revolved. Only a few seconds are required to wind each strip into a coil. The latter is then tied with a piece of wire, removed from the reel and placed on a 4-wheel truck as shown in Fig. 1.

The principle for making hot-strip steel on the 10-inch mill is the same as that applied for making it on the 16-inch mill. The billet is heated in a 40-foot Laughlin furnace and is then passed through a 14-inch roughing mill consisting of six stands. This roughing mill is driven by a 1500-horsepower motor which operates at 514 revolutions per minute, constant speed. After the preliminary treatment, the billet is sent through the 10-inch finishing mill which consists of a two-stand, double duo and one stand of bull-head rolls. The duo mill is driven by a 1500-horsepower motor which operates at from 257 to 514 revolutions per minte. The finishing mill is driven by a 600-horsepower motor which operates in conjunction with a rotor converter for speed regulation. All motors which operate the 10-inch mill were

FIG. 4—GANG-SLITTING, STRAIGHTENING AND CUTTING MACHINES IN THE COLD-ROLLED DEPARTMENT

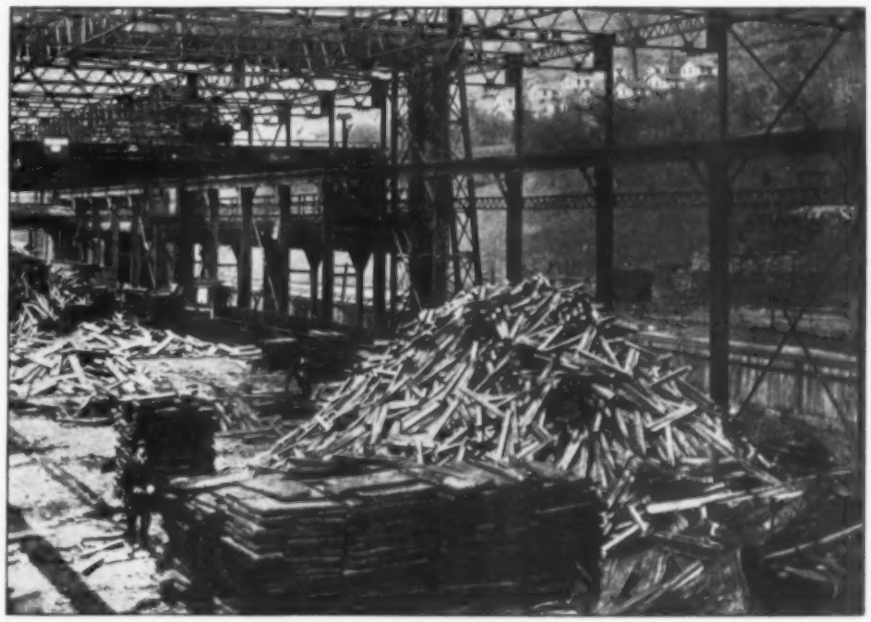


FIG. 5—BILLETS AND SLABS ARE TRANSFERRED FROM CARS TO STORAGE YARD BY MEANS OF A MAGNET

built by the Allis-Chalmers Mfg. Co., Milwaukee. The mill is served by a 20 x 300-foot hot bed which discharges the strips by means of a run-out table, centrally located. This is clearly shown in Fig. 2. The 10-inch mill has a capacity of approximately 5000 tons a month. The rolling equipment in both hot-strip mills was built by the United Engineering & Foundry Co., Pittsburgh.

After leaving the shears, the strips are taken to the warehouse, unloaded by means of electric magnets and assorted into piles. From here they are transferred to the recoilers where they are opened for pickling. The latter is necessary in order to remove the scale which adheres to the surface of the steel. The pickling process consists of submerging the strips and coils for a short time in a weak solution of sulphuric acid and then removing as much of the acid as possible by dipping them into water. At this stage of the process a great deal of care is required in getting the last trace of acid washed from the surface of the steel. In general practice, in spite of the number of washings, there often remains some acid which later causes enough erosion to blemish the steel. As a further preventive, some makers of strip steel apply a coat of lime but even then the reaction of the acid is only delayed for approximately three months.

The equipment in the pickling department of the Weirton company consists of three machines of the 4-arm, revolving type. Two machines are housed in a building 100 x 40 feet; the third is housed in a building of similar dimensions. Provision has been made for installing another machine in the latter building should operating conditions warrant it. The pickling equipment was furnished by the Mesta Machine Co., Pittsburgh. After having been pickled, the steel is either annealed and marketed as hot-rolled strip steel or it is treated further in the cold-roll strip department.

Fourteen double furnaces are provided for annealing the stock. These are housed in a building 1000 x 50 feet. Six producers supply the gas for heating the furnaces. These as well as the furnaces were built by William Swindell & Bros., Pittsburgh. The total annealing capacity of each furnace is 60,000 pounds of steel at one charging. A view of this department is shown in Fig. 3. The strips and coils are piled on a cast-iron plate which is fitted with a cover as shown in Fig. 3. The box is then placed in the furnace. After the strips are thoroughly annealed, requiring approximately 24 hours, they are withdrawn from the furnace and passed through a machine which applies a coat of oil to the surface. This tends to prevent oxidation.

Where a smooth finish is required, it is necessary to further roll the steel in the cold state. Among the uses for which the cold-rolled mills are producing steel is that for booster cases for shells. Cold-rolled strip steel is also used for automobile, cash register and typewriter parts of all descriptions, high-grade tubing for windshields, beds, fine hardware, stove trimmings for nickel-plate work, forks and spoons, bicycle and motor truck chains, and for deep-drawn work, such as automobile headlights, one-piece oil cans, electrical appliances, talking machine parts, etc. The capacity of the cold-rolled strip department of the Weirton Steel Co. is 6000 tons a month.

This department is housed in a building 400 x 200 feet, of which 200 x 100 feet of floor space is devoted to shipping. Forty mills are installed in this building, most of them having been built by the Waterbury Farrell Foundry & Machine Co., Waterbury, Conn. They include one 16 x 20-inch tandem mill, consisting of four separate stands of rolls each; three 12 x 16-inch tandem sets of four mills; two 8 x 10-inch tandem sets of four mills; two each of 8 x 10-inch, 12 x 12-inch and 6 x 10-inch single mills; and, ten 12 x 16 inch single mills. For further treatment there are eight 9-inch and two 7-inch gang-slitting machines, seven straightening and cutting machines, one 6 x 20-inch coiler, one 4 x 20-inch coiler, one cleaning machine, three breaking machines and two semiautomatic oiling machines. The building is heated with hot air and is equipped with numerous labor-saving devices.

Steam is supplied to the mills by means of three 150-horsepower Heine and two 300-horsepower Stirling boilers. A modern machine shop is operated in conjunction with the mills, most of the machine tools being motor driven.

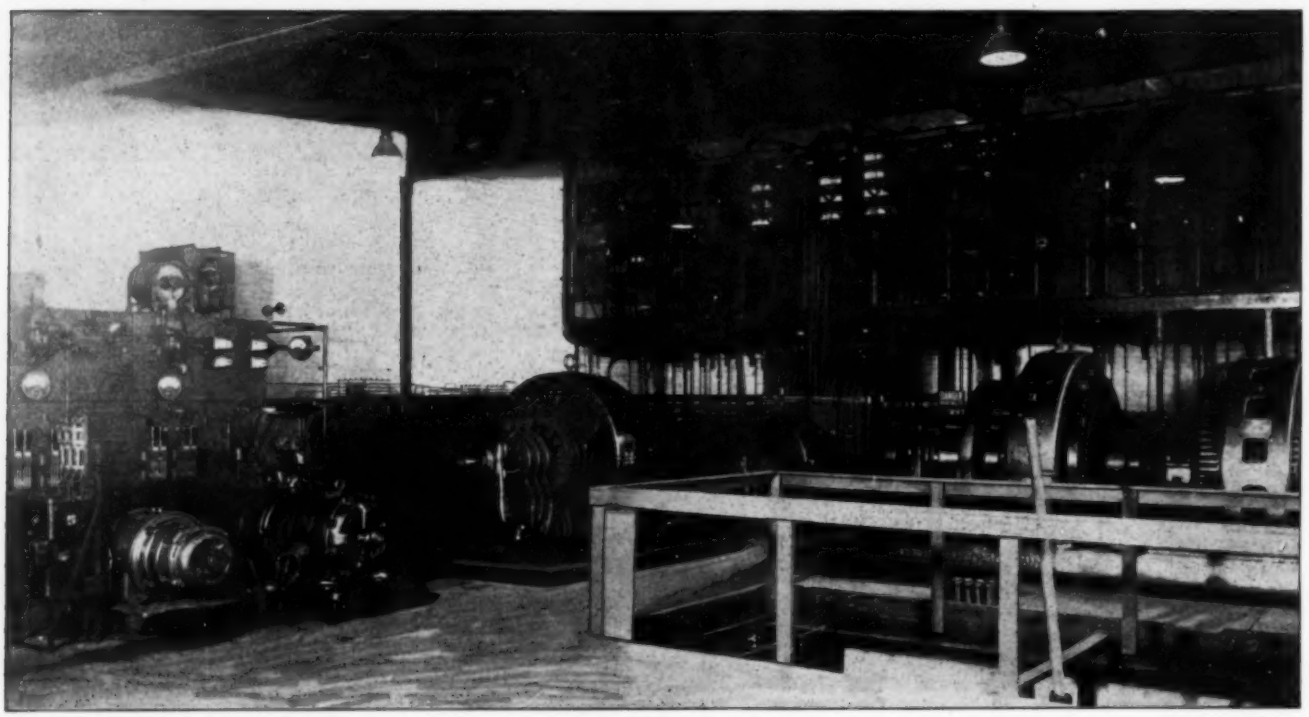


FIG. 6—CURRENT FOR OPERATING THE STRIP MILLS IS GENERATED AT THIS SUBSTATION AND CARRIED OVER HIGH-TENSION WIRES TO A CENTRAL POWER PLANT

The Westinghouse Electric & Mfg. Co., Pittsburgh, is employing blind workmen for taping coils. At the present time, seven persons are employed and their efforts have been very satisfactory insofar as quality is concerned. Naturally as this is new work, the speed is not as great as with those who can see, but this will increase as the blind workers become more proficient. Also it is expected the number employed will be very materially increased. This work has been developed with the co-operation of the Pennsylvania association, and in order that the workers may not suffer any loss of revenue while learning, the association is contributing toward each man's earnings.

Order More Industrial Conservation

Curtailment Policy Now Extended to Sixteen Additional Lines of Manufacturing—Tabulating Machine Industry Given Recognition as Essential—New Tin Rulings Are Announced by the War Trade Board

WASHINGTON, Oct. 22.—Following its policy of conservation of labor, fuel, transportation, material and capital where possible in order to supply war demands, the priorities division of the war industries board has announced additional curtailments, affecting 16 different lines. It also has made amendments to action heretobefore taken with regard to roadmaking machinery and cast iron boilers and radiators. Regarding road machinery the division will permit those things to be done as heretofore specified and also permit the manufacture of 15 per cent of six-twelfths of the 1917 production for civilian uses, but in no event should the total production for six months from Oct. 1, 1918, exceed 50 per cent of the 1917 tonnage. With regard to cast iron boilers and radiators it is announced that because of conditions in the trade during 1917, it was ordered that the basis of production for four months from Sept. 1, 1918, should be 40 per cent of four-twelfths of the average production for 1915-16-17.

Among the new additional curtailments announced are the following:

Electric fans: On the 12 months basis curtailed to 40 per cent of 1917 production.

Safes and vaults: 1. Heavy safes and vaults—six months from Oct. 1, 1918, curtailed 100 per cent.

2. Smaller safes, and

3. Office cabinets and the like. For six months commencing Oct. 1, 1918, curtailed to 50 per cent of six-twelfths of 1917 production.

Lawn mowers: From Oct. 1, 1918, for three months curtailed to 40 per cent of three-twelfths of 1917 production and that the industry be notified to get on war work before the expiration of said three months.

Padlock industry: For six months from Oct. 1, 1918, curtailed to 70 per cent of 1917 production.

Builders' hardware: For six months from Oct. 1, 1918, curtailed tonnage used in production to 40 per cent of 50 per cent of tonnage used in 1917 production.

Step ladders: Six months from Oct. 1, 1918, curtailed to two-thirds of six-twelfths of 1917 production.

Scales and balances: Six months from Oct. 1, 1918, curtailed as follows:

1. Heavy track scales and heavy automatic dial scales curtailed to 50 per cent of six-twelfths of 1917 production.

2. Store and counter and spring scales and balances curtailed to 40 per cent of six-twelfths of 1917 production.

3. Automatic dumping and recording scales curtailed to 50 per cent of six-twelfths of 1917 production.

4. Scientific scales not to be curtailed.

Sporting arms and ammunition: Subject to revision, curtailed on the 12 months basis to 10 per cent of 1917 production.

Cash registers: (a) Because of the large amount of government work now being done by the National Cash Register Co., its production of cash registers for six months from Oct. 1, 1918, be curtailed to 25 per cent of six-twelfths of 1917 production.

(b) All other cash registers concerns for six months from Oct. 1, 1918, curtailed to 50 per cent of 1917 production.

Rat and animal traps: For six months from Oct. 1, 1918, curtailed to 50 per cent of six-twelfths of 1917 production.

Talking machine needles: For six months from Oct. 1, 1918, curtailed to 50 per cent of 1917 production in tonnage.

Ice cream freezers: For six months from Oct. 1, 1918, curtailed to 40 per cent of six-twelfths of 1917 production.

Electric vacuum cleaners: For six months from Oct. 1, 1918, curtailed to 75 per cent of six-twelfths of 1917 production.

Tabulating Machines Given Priority

The adding and calculating machine, autographic and credit register, time recorder and tabulating machine industry has been accorded priority. The board recognizes that the disturbed conditions in accounting departments and organizations are substantial and that the shortage in experienced clerical help is real, and that such machines and devices are almost indispensible in both war and nonwar industries. Pledges must be given by the industry to conserve materials, urge repair instead of purchase of new machines, and give preference in filling orders to the United States government and its allies and for export under the war trade board licenses.

Supplies of tin plate for the tobacco industry, it is indicated by a statement issued by the war industries board, are to be cut off entirely. According to the announcement, regulations are to be promulgated by the priorities division fixing a day beyond which the manufacturers of tobacco shall not use tin plate and tin foil for packing and marketing their products. The tobacco industry in 1917 used metal containers for their products in the manufacture of which 4 per cent of the tin plate output of the United States was consumed, being 1,481,187 base boxes, containing 74,059 tons of steel and 1333 tons of pig tin. Tin foil contains in excess of 4 per cent of pig tin.

Tin Rulings Announced

The war trade board has announced new rulings with regard to the importation of tin, amorphous graphite and cream separators. In its ruling No. 276 it has introduced restrictions on the importation of tin in order to give effect to the regulation of the distribution of tin and tin ores, concentrates and derivatives under the tin executive recently established in London. All outstanding licenses for the importation of pig tin, tin ore and tin concentrates and of any chemicals extracted therefrom have been revoked as to ocean shipment from abroad after Oct. 20. Hereafter no licenses will be issued for the importation of these commodities except to cover shipments consigned to the United States Steel Products Co.

Ruling No. 271 modifies the earlier restriction upon the importation of graphite and takes the place of No. 157 and is as follows:

No license for the importation of amorphous graphite (plumbago) shall be issued hereafter, except such shipments as are of Canadian origin and come overland or by lake from Canada, or of Mexican origin and come overland from Mexico.

Licenses may be issued for the importation of graphite of crucible grade when the applicatons therefor are otherwise in order, and where the chemical section of the war industries board has approved the issuance of said license, and has certified that the ultimate consumers of the said graphite have been using at least 20 per cent of domestic or Canadian flake graphite in the manufacture of their products.

Hereafter in accordance with a new ruling of the war trade board (W. T. B. R. No. 275), no licenses will be issued for the importation of cream separators of types which are not permitted to be manufactured in the United States.

Munitions Patent Board to Study War Questions

Washington, Oct. 22.—Establishment of the munitions patent board has been brought about by the secretary of war and the secretary of the navy for the purpose of co-ordinating the policies of the war department and the navy department. The members of this board consist of Thomas Ewing, who has been jointly selected by the secretary of war and the secretary of the navy; Max Thelen, the representative of the war department, and Pickens Neagle, representing the navy department. The board has been formed to consider clauses in contracts of the respective departments dealing with patents; questions as to the validity or infringement of patents and the patentability of inventions; questions as to the amount of compensation to be paid for patents or for the use of patents; and all other miscellaneous questions as to patents which may arise in the two depart-

ments interested. The board is empowered to recommend, from time to time, to the secretary of war and the secretary of the navy suitable action to be taken or policies to be adopted with regard to all patent matters which are brought before it for consideration. The action of the board in matters which come before it in so far as they apply to the war department is subject to the final approval of the secretary of war, and in the matters for the navy is subject to the final approval of the secretary of the navy.

Rail Freight Capacity at Ports Doubled

WASHINGTON, Oct. 22.—Railroad transportation facilities at six of the largest terminals on the Atlantic coast are now in excellent condition, according to reports of the regional directors to Director General McAdoo. The reports were based on careful surveys in the regions made at the request of the director general.

One of the remarkable features of the reports was that the export tonnage handled in September was more than double that last December, January or February and that it was handled with less trouble and confusion than was the tonnage handled during the period of congestion. The figures record the removal of all congestion which last winter almost paralyzed operations, limiting and imperiling the flow of supplies overseas. The ports surveyed were those of New York, Philadelphia, Boston, Baltimore, Newport News and Norfolk. Some of the important data brought out follow:

Accumulations of export freight in railroad terminals at the six seaports were reduced on Oct. 1 to 18,796 carloads, of which only 5383 carloads were actually in cars. Last December the export accumulations totaled 44,320 carloads, approximately 2,000,000 tons, with 12,552 loads standing in cars.

In September the export, in addition to bulk grain and coal, was 1,517,795 tons. Last December it was 682,563 tons; in January only 588,988 tons and in February, 616,651 tons. The past month's increase was 122 per cent over December, 157 per cent over January and 146 per cent over February.

The trans-shipment of record-breaking tonnage at the ports has proceeded so smoothly under the new system throughout the past few months that the menace of a break in the "bridge to Pershing" appears to have been definitely removed. The accompanying table shows the periodic accumulation figures for all ports.

Railroad Facilities Not Taxed

The railroad facilities for export have not been forced to their extreme limit at any time during the past six months, although the tonnage, except for August, has increased each month. Excluding the government's war freight, which under the present system is accorded preference over all other traffic, and excluding also bulk grain and coal, the railroads' deliveries of export in carloads at north Atlantic ports for the past six months averaged daily 1055 cars in April, 1348 in May, 1480 in July, 1232 in August and 1651 in September.

The situation is said to have disclosed some shortage in production of goods for export. The chief factor has been the extraordinary demands for steel both at home and abroad, which "even the great efforts of that industry have been unable entirely to fill." Special efforts were put forth by the railroads throughout the summer to secure a greater steel tonnage and form a "bank" at the seaboard upon which the winter levies could be made, but the accumulations of metal unloaded on the ground at the seaports have steadily been reduced "because of insufficient current production."

Coal exports for war purposes, excluded from the figures previously given, formed a large part of the railroads' gross tonnage. For the seven months, January to July inclusive, 10,915,337 tons were shipped overseas, an average of more than 1000 carloads a day.

Chrome Ore Sufficient

Washington, Oct. 22.—Announcement has been made by the war industries board that the chrome ore supply in the United States is sufficient, the situation is in hand and additional investments for production are not necessary for the present. Hugh W. Sanford, chief of the ferroalloys section of the chemical division of the board authorized the following statement of the point of view with regard to the production of domestic chrome ore: "Owing largely to the facts that consumption of chrome ore in the United States has been reduced by changes brought about by the war program and furthermore on account of the large domestic production of ore that has taken place in the United States during the past year, in the opinion of the war industries board, the situation is well in hand and there is no necessity for the present of additional investments being made in the United States for the production of chrome ore."

New Export License Form Now in Circulation

Washington, Oct. 22.—The revised supplemental information, form X-2 (October, 1918), to be attached to applications for licenses to export articles covered in schedule "XP," including pig iron, scrap, and numerous semifinished and finished lines of steel, as published in THE IRON TRADE REVIEW of Oct. 10, and form X-26 have been prepared by the war trade board for distribution among exporters. Applications which have form X-26 attached will not require form X-2.

Previous issues of this supplemental information sheet should no longer be used in connection with applications for licenses. The recommendation of the government of the country of destination is no longer required on this information sheet, except where the commodity is arms or ammunition.

The form follows the agreement reached between the war trade and war industries boards two weeks ago when they announced that they had jointly adopted certain rules and regulations simplifying the procedure of obtaining export licenses from the war trade board, priority certificates from the priorities committee of the war industries board, and permits from the director of steel supply.

Monthly Shrinkage of Stalled Freight

	Dec., 1917	March, 1918	June, 1918	Sept., 1918	Oct., 1918	Percent of Decrease
In cars	12,552	7,018	9,334	6,370	5,383	67.11
On piers, etc.	8,349	7,000	6,321	5,116	5,664	39.34
On ground	23,419	16,701	12,250	9,080	8,349	65.64
Total	44,320	30,719	27,905	20,566	18,796	57.59

Sulphuric and Nitric Acid Prices Are Fixed

Washington, Oct. 22.—Prices on sulphuric and nitric acids for the current quarter, effective as of Oct. 1, have been approved by the President following recommendations of the price fixing committee of the war industries board based upon conferences held with manufacturers. In addition, the railroad administration, upon request of the war industries board, has revised rates on pyrites ore from New Mexico to eastern and southern destinations to an equal basis with manganese ore in order to stimulate production of sulphuric acid.

The present price on sulphuric acid, 60 degrees Baume, is fixed at $16 per net ton; on acid 66 degrees Baume, $25; and on acid, 20 per cent Oleum, $28, all f.o.b. manufacturers' works in sellers tank cars. All strengths less than 92 per cent are to be calculated from the price for 60 degrees and all strengths above 92 per cent to be determined from the price for 66 degree acid. An extra of ½ cent per pound is allowed on all sulphuric acid

sold in carboys, carload lots, and ¾ cent per pound in carboys, less than carload. Any quantity in drums draws an extra of ¼ cent per pound.

On nitric acid of 42 degrees Baume, the price is 8.5 cents per pound f.o.b manufacturers' works in carboys. In carboys, less than carload, ¼ cent per pound extra is allowed. There will be no additional mixing charge for mixed acids, same being figured on the acidity content.

To Utilize Trade Papers to Clear Up Doubts

Washington, Oct. 22.—On all subjects in which there may be a technical interest, appealing more to the trade paper than to the daily press, it is entirely proper, in fact, it is desirable, for section heads to see trade paper representatives to answer questions of direct concern to the trade, when these questions involve no matter of policy. This is the conclusion reached at a meeting of commodity chiefs of the war industries board on Oct. 16. It was pointed out this will be a source of contact with the industry that should prove valuable as a means of disseminating accurate knowledge instead of allowing individuals in the industry to give their personal interpretation to points under discussion. It was stated that if any doubt exists as to what should or should not be circulated, information can be obtained from Herbert B. Swope, assistant to the chairman.

Judge Edwin B. Parker, priorities commissioner, was requested to prepare an article for publicity, discouraging the practice of storing materials for after-war export, and to be used by the section heads as they consider necessary.

Regarding construction of new facilities it was concluded that any calls for plant extensions should be submitted to the facilities division. If it is non-war construction, the matter should be referred to the non-war construction section.

Owing to the influenza epidemic and shortage in housing facilities, the commodity chiefs were requested to defer bringing further help to Washington, especially women employes unless arrangements have been made in advance for living accommodations.

Alex Legge vice chairman of the war industries board asked each commodity chief to submit a condensed statement as to the present condition of the industry of his respective section for use on his trip overseas.

It was stated also that violators of the priority rules will be referred to Judge A. C. Ritchie, general counsel of the board.

Capital Odds and Ends

WASHINGTON, Oct. 22.—Copper manufacturers will hold a meeting here on Friday of the current week with the nonferrous metals section of the war industries board to fix prices on copper beginning Nov. 1, unless the industry itself calls off the meeting. In arranging for the conference, an exception was made to the recent ruling of the board by which all meetings from Oct. 16 were cancelled owing to the epidemic of Spanish influenza. At present the fixed price for electrolytic, prime lake and castings copper is 26c a pound, carlots, f.o.b. eastern refinery, and f.o.b., New York, from western refinery.

* * *

During August, 769 freight cars, 330 being box and 249 gondola cars, were constructed, comparing with 518 built in July, of which number 148 were box, 119 hopper and 136 gondola cars.

* * *

War needs for steel and other materials makes it necessary that bridge construction be reduced to a minimum, announces the United States highway council, and approval must be given by the council before materials can be obtained.

* * *

According to a recent announcement by Chairman Baruch of the war industries board, production in 22 industries has been reduced from 25 to 70 per cent for the last four months of 1918, to save iron, steel and fuel needed for the manufacture of war supplies.

* * *

Camp Joseph E. Johnston has begun the manufacture of galvanized iron buckets from waste and salvage material reclaimed in the various camps. This is an army experiment and if successful may be extended to other lines and to greater production.

* * *

W. H. Merrill, chief of the fire prevention section of the war industries board, has found upon investigation of the fire hazard in 1811 munitions plants, that conditions in the main are ideal. Inspection was made of 466 steel mills and metal working plants.

* * *

Relief for sufferers from Spanish influenza in the coal mining districts is being undertaken by the United States fuel administration. Eighty army surgeons from the army ambulance corps at Allentown, Pa., are in the field, 51 of them going from the Minerstown, Pa., district.

* * *

General Pershing has cabled thanks on behalf of the American expeditionary forces in France to the 14,000 employes in the Eddystone, Pa., rifle plant of the Midvale Steel & Ordnance Co., and asked them to keep production going in the coming months in response to a recent pledge made by the employes for earnest, regular and steadfast work. The pledge was cabled to General Pershing on the occasion of the production of 1,000,000 rifles by the plant.

* * *

At a conference held here last Thursday between congressional leaders and Chairman Baruch of the war industries board it was decided that no further effort be made by congress to continue the existing daylight saving law and the hands of the clock will be turned back on Oct. 27 as originally proposed.

* * *

Employes of the field artillery erecting department of the Rock Island arsenal have volunteered not only to forego their usual Thanksgiving holiday in order that they might donate a full day's production to the army, but have proposed to turn over their wages for the day to the American Red Cross.

* * *

During the recent explosion of the Gillespie shell loading plant at Morgan, N. J., by means of observations from an army airplane it was possible to so direct the fight against the conflagration as to check the flames and probably prevent further loss of life and property, at least to save from destruction 8,000,000 pounds of trinitrotoluol.

* * *

It is expected the United States Steel Corp. will fight the attorney general's motion that the antitrust suit be continued to the next term of the supreme court. This was the only case which was not sent over recently when continuances were made in the suits against the American Can Co., the Eastman Kodak Co. and other corporations.

* * *

Railroad Director General McAdoo has authorized the establishment on 30 days' notice of a commodity rate of 5c per 100 pounds on slag from Donaghmore, Pa., on the Cornwall railroad to Philadelphia in lieu of the present class rate. This will permit the movement of slag from the plant of the National Slag Co., now under construction at Donaghmore.

* * *

The Single Service Package Corp. New York, has been congratulated by Maj. Gen. C. C. Williams, chief of ordnance, upon the achievement of manufacturing 100 completed "offensive" grenades per minute, attaining this record during production of its third million of the bombs which were shipped to France in September. Twenty-five operations are necessary in the manufacture of this type of grenade.

* * *

Maj. Gen. George W. Goethals, director of the division of purchase, storage and traffic, of the war department, has been made a member of the war industries board because of the close relations of the board and his department. The army has already had one member, Brig. Gen Hugh S. Johnson, who continues with the board. General Goethals has long been a member of the priorities board.

Settles Many Priority Questions

In Comprehensive Discussion Secretary Hirsch of Priority Committee Clarifies Perplexing Points—Automatic Priority Not to be Passed Down the Line—Automatic Rating Allowed to Jobbers' Replacements—Explains Export Procedure

SEVERAL important questions covering the application of the principles of priority of production as they now are being administered by the priorities division of the war industries board, were settled in an authoritative way in a comprehensive discussion of the general subject of priority by Morris Hirsch, secretary of the priorities division of the war industries board given under the auspices of the Merchants association, at Hotel Astor, New York City, Oct. 16.

Probably the most far-reaching announcement made by Mr. Hirsch in his address and subsequent interrogation, was that automatic priorities given under Sections 7, 8 and 9 of Circular No. 4 are not intended to be passed down the line. This is especially of widespread significance in connection with Section 8. The automatic priority accorded under Section 8, to "materials, equipment or supplies" for specified purposes, is intended to be applied to the needs of the particular manufacturer whose product is noted and to him exclusively. Mr. Hirsch stated that the use of the automatic ratings on subsidiary requirements, had been misunderstood by practically everybody who had come in contact with their provisions.

Upsets Present General Practice

Manufacturers practically without exception, have interpreted Section 8 of Circular No. 4 to permit the reflection of the principal automatic rating to all materials, supplies and equipment entering into the necessary manufacture of the given article and had been so applying this plan in practice. It was generally understood that this was the intent of the priorities authorities when they adopted the automatic classifications to expedite the functioning of the priorities system. Until recently no uncertainty as to the position of subsidiary contracts under this interpretation was entertained. Secretary Hirsch's statement officially settling the point made it clear that the general procedure now being applied must be modified.

Mr. Hirsch made it clear in his address that the present position of the priorities authorities is not to regard the word "equipment" to which automatic priority is given by Section 8, as meaning equipment required for the purposes of manufacturing the stipulated products. The general understanding by the manufacturers had been that the word "equipment" covered all new appliances needed for the manufacture of the given article. Mr. Hirsch's explanation is that only such equipment as enters into the designated product as a component part is meant. Since under Section 8, traveling cranes are given a B-1 rating, a motor required to operate a crane would take the same rating because it was equipment entering into the completed product. A motor or an engine of some other equipment required for the general operations of the plant producing the crane, however, would not come within this scope and would be subject to the application for a priority certificate. Similarly an engine that entered into a ship would receive the automatic rating of A-5 or A-6 given to the building of ships depending on their character. But tools neded by the shipbuilding plant to carry out the specific construction contract, would not fall within this rating.

Secretary Hirsch explained the manner in which automatic ratings of A-5 given under Section 7, to direct government orders, might be applied to materials, equipment or supplies required for completing the particular government order. He explained how manufacturers will be allowed to use for such materials as they require, automatic ratings on orders placed through jobbers or agents where the latter has not the materials on stock. The position the jobber who up to this time has not been concerned with automatic ratings, is to be altered to the extent that he may receive an automatic A-6 priority for the replacement of materials used in filling direct orders from the war or navy departments, or the Emergency Fleet corporation.

On the question of exports, Secretary Hirsch explained in a definite way, the simplified plan whereby priority ratings and the issuance of an export license are merged. The granting of an export license automatically carries with it the necessary priority rating.

New Circular About Ready

All the new points brought forth by Secretary Hirsch are to be incorporated in the new supplement No. 2 to No. 4 which will be issued by the priorities committee in the course of a few days.

"In the industrial fight you are today confronted by conditions that we have not had before," said Mr. Hirsch. "'Priority' is a new word in the vocabulary of business. Formerly it was a question of knowing the sources of supply and of bargaining and of paying the price for your delivery. That is not true today. Delivery must be regulated in accordance with the urgency of the need to be satisfied and that is the function of the priorities division.

"The military necessities, the military program, is of course mapped out and controlled by those in authority in military ways. They present their military necessities with their eye on the front line trench and all the way back. They present those necessities to the priorities division and to the war industries board as a whole, and it is then our duty to attempt as best we may to co-ordinate the productivity of this country to meet those military requirements. In priority we think of various things; we are frequently confused to get things to the front or to get materials where they are most needed. We must consider fuel. We must consider electrical energy; we must consider labor; we must consider transportation; we must consider the delivery of the materials themselves. The priorities division has the duty of administering priority along these several lines. The priorities division is divided into several sub-divisions. The priorities board is a co-ordinating group on which there are representatives of each of the governmental departments—representatives of the army, the navy and the emergency fleet, and likewise representatives of various industries—are business men who represent the industry. Those men attempt to lay down the fundamental principles which will co-ordinate the activities of industry with the needs, from a military standpoint. The great result that we have seen up to the present time from the activities of the priorities board has been the issuance of the preference list.

Preference List Not Priority

"The preference list is frequently confused with the priority. The preference list, however, is supposed to be a guide to governmental agencies and to others in the supply and distribution of electrical energy and fuel, labor and in the supply of transportation service to the extent that that service helps toward the completion of the finished product and there it stops. The preference list is a list of industries and plants entitled to preference. It has nothing to do with priority in materials other than that the priorities committee has adopted the preference list as a basis for what we term an automatic C classification. The preference list is divided into four classes, 1, 2, 3 and 4. Those classes have a significance when it comes to fuel and electrical energy, etc. They have no significance when it comes to the delivery of the material. The preference list is, however, as I have suggested, a basis for the automatic class C priority.

"The new nonwar construction section now has jurisdiction and control over all new construction of nonwar character throughout the country. It has published its regulations in a pamphlet.

"Then there is the labor priorities section. The labor priorities section assists the priorities commissioner in determining priorities with reference to labor. It offers its suggestions to the other governmental agencies interested in labor, to the United States employ-

ment service, to the draft boards, to the industrial advisors of the draft boards; in other words, it gives the point of view of the war industries board and of the priorities committee particularly, with reference to the necessity of that industry receiving, so far as it may, an unhampered supply of labor.

"The priorities committee deals with priority in production and delivery of materials. Priorities in production and delivery are divided into classes A, B and C, and a AA superimposed upon them all in case of absolute urgency and necessity. Ratings are given by priorities certificates or by automatic priority ratings. Priority certificates are granted on applications made on a regular application form, and the application gives a rating to the order; and if an earlier delivery is required than has been contracted for, if the priorities committee deems it to be in the public interest, it will specify an earlier delivery date.

"It also administers priority items of the automatic classifications. These classifications are not intended to be all-inclusive. Up to the present time we have not intended to cover the entire field of industry. Really, those classifications were at first based upon our experience with over 100,000 applications and certificates, and were designed to be almost as much an aid to the priorities committee as they were intended to be an aid to the manufacturing plant; because they were intended to relieve the terrific strain and pressure that was placed upon Washington by virtue of the tremendous number of applications that were being received.

Pledge Causes Confusion

"These automatic ratings are obtained by attaching to the order an affidavit in a form definitely set out in our circulars. There is one little provision of that affidavit that has caused some confusion; that is paragraph 1 of the affidavit which states that 'I have taken and filed whatever pledge has been required by the war industries board from the industry of which I am a member.' Those pledges have not been required of a great many industries. You will note the wording of that paragraph. It states 'whatever pledge has been required.' If no pledge has been required of your industry, and if you are entitled to an automatic rating under the provisions of our circulars, then you may with propriety use that affidavit with that particular clause left in. It should not be omitted, otherwise your affidavit might be questioned when it reaches your source of supply.

"In this connection I might say that in supplement No. 2 to our Circular No. 4 which we hope to have from the printer in the course of a week or ten days, there will be added a further list of purposes entitled to automatic ratings. Probably there are 15 other purposes than are enumerated in the lists you have before you.

"There will likewise be a change which I conceive to be of real help to the concerns which place a great many orders. We are going to allow a blank affidavit; for instance, a concern intending to place a large number of orders with another concern may make an affidavit to that second concern, stating that all the orders placed with the concern will be entitled to the automatic rating, as suggested in the certification to accompany the order. When that affidavit has once been presented to the second concern, all that will be necessary under this new supplement will be that the concern that has so presented the affidavit, will place on its orders from that time on, a certification stating precisely what rating the order is entitled to, and sign it. No further affidavit is necessary.

"Supplement No. 2 is likewise going into further explanations with reference to the extent of the use of automatics. It is going to explain what has been misunderstood by practically everybody, and that is the meaning of the word 'equipment' in the heading of those sections allowing automatic ratings. You will note that those sections state that each order for materials, equipment and supplies for the purposes following will be entitled to the automatic ratings. That word 'equipment' was not designed to cover new equipment for the purpose of manufacturing those products. It was designed solely to cover such equipment as enters into the product as a component part thereof. In other words, if you are a builder of ships, you would be entitled to the automatic rating provided for the building of ships on a a turbine that entered into the ship, but you would not be entitled to the shipbuilding automatic rating on, say, a crane which you were going to use for the purpose of building these ships. That will be definitely explained in supplement No. 2.

"It will likewise be explained that automatic priorities are not intended to go down the line. In other words, they are provided for the particular manufacturer noted. A manufacturer of machine tools, for instance, is entitled to an automatic A-6 on materials to manufacture those machine tools. But if he places his order with another concern and that next concern desires materials, even though those materials are ultimately to enter into the manufacture of machine tools, the order would not be entitled to the automatic A-6 rating provided for the manufacture of machine tools. In other words, it is an automatic rating provided for the immediate manufacture of the products definitely stated as entitled to the automatic rating.

"We are going to have one thing further which we believe will be of great assistance to those manufacturers operating under direct contracts from the government. If a concern has not been otherwise provided for

New Points on Priority

Made Clear by Secretary Hirsch of Priorities Committee

AUTOMOTIVE priorities are not intended to be extended down the line. This is particularly important in Section 8 of Circular No. 4 under which most manufacturers have been accepting the original priority rating to apply to subsidiary requirements. Neither are priority certificates to be reflected to subsidiary contracts.

The word "equipment" in the phrase "materials, equipment and supplies" for certain products given automatic priority under Section 8 of circular No. 4 does not mean equipment for the purpose of manufacturing these products. It means only such equipment as is a component part of the product which takes the automotive priority.

Direct government contractors given automotive priority of A-5 under Section 7 may apply this rating to the materials equipment and supplies required for completing the government order. (This ruling already had been given publicity in THE IRON TRADE REVIEW.)

Jobbers are to be allowed an automatic A-6 priority for replacement of materials used to fill direct orders from war department, navy department or Emergency Fleet corporation. Other replacements will continue to take B-4.

Manufacturers to be allowed to use for needed materials, automatic ratings on orders placed through jobbers or agents where latter has not the materials in stock.

A manufacturer must not promise any deliveries on an automatic rating that will interfere with the deliveries when and as required of orders covered by AA, A or B priority ratings. If the customer needs early delivery superseding priority orders already on hand, he must prove his case to the priorities committee.

Automatic ratings do not apply to exports. Under simplified plan all exporter has to do today is to make the prescribed application to the war trade board for an export license. Granting of the license carries with it the necessary priority rating.

All the new ramifications and interpretations of the priority regulations will be included in Supplement No. 2 to Circular No. 4 about to be issued by priorities committee.

by an automatic rating, in other words if section 8 of our circular does not allow him a rating that he can use in his general manufacturing process, and if that manufacturer is working under a contract placed directly with him by the United States war department, navy department, or United States Shipping Board Emergency Fleet corporation, and that direct order to him bears an A-5 automatic rating or an A-5 or higher priority certificate, then we will allow him to use an automatic A-5 priority rating to secure his materials to enter into the manufacture of that direct government order.

"That will be, we conceive, of tremendous assistance to those who are working under direct contracts with the government, but it should be noted there also that that applies only to the concern under direct contract, it does not apply to the subcontractors. With reference to orders placed with or through jobbers, there has been a great deal of confusion or misunderstanding. The jobber up to the present time has been justified in delivering for any purpose which would, if the order were placed with a manufacturer, be entitled to an automatic rating or for any purpose included in the preference list, or to any plant included in the preference list. In other words the automatic ratings were not designed to apply against the jobber; so far as the jobber has been concerned it should have been absolutely immaterial whether a concern is entitled to an A-4 automatic rating as with manufacturer, or whether a plant was included in the preference list. One or the other has been a complete justification for the jobber of iron or other materials. This applies to the making of delivery.

Jobbers to Get Automatic

"With reference to orders placed with or through jobbers, there has been a great deal of confusion or misunderstanding. The jobber up to the present time has been justified in delivering for any purpose which, if the order were placed with a manufacturer, would be entitled to an automatic rating or for any purpose included in the preference list, or to any plant included in the preference list. In other words, the automatic ratings were not designed to operate against the jobber; as far as the jobber is concerned, it should have been absolutely immaterial whether a concern is entitled to an A-4 automatic rating, or was a manufacturer, or whether a plant was included in the preference list. One or the other has been a complete justification for the jobber of iron or other materials. This applies to the making of deliveries.

"There is a possibility, a practical certainty that this will be amended somewhat in the proposed circular supplement to which we have referred. There is a possibility that, owing to the absolute need for a large number of concerns having on hand sufficient materials to satisfy the urgent war needs, they allow the jobber an automatic A-6 priority on replacement of materials that he is to use exclusively for direct orders placed with him by the United States war department, navy department, or the Emergency Fleet corporation, and allow him an automatic B-4 rating on materials for other places.

"Suppose, however, that you require certain materials in your manufacturing processes and have placed an order with the jobber, but the jobber does not have the materials in stock. Can you use what automatic rating may have been provided for your particular manufacturing purpose? That likewise will be explained in the new supplement. You will be allowed to use the automatic rating on orders placed through jobbers; and, in fact, you will be allowed to make application for priority certificates on orders placed through jobbers or agents provided also that the delivery is for direct shipment from the manufacturer or the producer to the consumer. Under these conditions the automatic rating may be applied on orders placed through jobbers or agents.

"Now, there are well defined rules with reference to the quantities of iron and steel on which a jobber may have priority. No priority has been provided for a jobber for other products. On iron and steel products he at the present time has a B-4 for replacement for the quantities that he delivers. It is not so much what he is going to do with it as what he has done with it in that particular case. With the jobber, it is a question of replacement; with the manufacturer, it is a question of what he is to do with it. Of course, the replacement must be distributed by the jobber in accordance with well defined rules. We have provided that each jobber of iron and steel materials must file a pledge with the priorities division, and must file likewise a pledge with the director of steel supply. After he has done that he is entitled to a B-4 classification for replacement of iron and steel materials that he delivered during the previous month for uses entitled to preference treatment.

"As to the question of materials which he is ordered to supply to be used in connection with some government project, that is not a question of jobber replacement; it is a question of the priority to which the user is entitled, and in that case the only claim, unless it be replacement and can be delivered under a replacement, is the automatic priority that the user can present on an order placed through the jobber for materials not in the jobber's stock, for delivery directly from the manufacturer to the consumer. Whatever justification there may be, if priority be needed, is the affidavit that the user makes on the order placed through the jobber. If any priority be needed on a finished product, not tonnage items, then delivery may be made by the manufacturer to the jobber to the extent that such delivery must not interfere with anything covered by priority or permits."

"One question that is fundamental and that has been raised a great many times with us in Washington: What orders, or rather what delivery should a manufacturer promise to a concern entitled to an automatic rating? Suppose for instance you have your entire production schedule filled up with priority orders of A and B classification until the 1st of January. Suppose a concern comes to you and states that they need certain materials of your manufacture—they need it this month, and they state to you that they can present to you the affidavit entitling them to an automatic, say, A-6 rating, and you promise them delivery tomorrow, and take it away, say, from the concern that has placed with you an order covered by an automatic B classification or a certificate covered by a B rating. The answer to that is this: A manufacturer should not promise any deliveries which will interfere with the deliveries when and as required of orders covered by class AA, class A, or class B priority ratings, whether under certificates or automatic ratings. In other words, the manufacturer in that particular instance, even though his customer was entitled to an A-6 rating, could promise him delivery only after the first of January. If he requires delivery earlier than that time, and if he can show—and the burden is upon him to show that the public interest will be served by allowing an earlier delivery—then he should make application to the priorities committee on the regular form, stating precisely when he needs delivery, stating precisely the justification that he could offer for displacing other orders on the books of the concern from whom he desired the materials. The priorities commitee will give careful consideration to such applications, and if they deem it advisable they will issue a priority certificate calling for a particular delivery date.

Priorities For Exporters

"I understand that there are here today a large number of exporters, who would be interested in the new rulings that have just gone into effect with reference to priority on exports. I may state that the automatic ratings were never intended to apply to exports. That certainly should have been very clearly explained in our circular, but we have not been in many wars like this, and we have not had many experiences to base our publications upon. It is a question of growing into the need that is presented to us, and we hope from time to time to clear up in our publications these problems that arise and are presented to us from day to day.

"The procedure that the exporter must go through today is very much simplified. All that is required is that he present his application for an export license on forms, and some of them are revised forms, provided by the war trade board. He need not make application to the priorities committee. He need not communicate with the priorities committee.

"It has been provided that a class C automatic rating will follow on those things on which the priorities committee ordinarily administers priority, and which are included on the export conservation list. If a higher priority is required, the war trade board will itself take up the problem with the priorities committee, and, if they together deem that a higher rating should be granted, they will issue a priority certificate which will accompany the export license, and which will of course place that order on the manufacturer's schedule in accordance with the priority rating granted."

Obituaries

HERBERT F. BLACK, assistant to President A. C. Dinkey of the Midvale Steel & Ordnance Co., a director in that company and vice president of the Union Coal and Coke Co., a Midvale subsidiary, died at his home in Pittsburgh, Oct. 17, after a brief illness. Mr. Black was 39 years old and was born and lived in Pittsburgh all of his life. He enjoyed a wide acquaintance in the steel trade, with which he was identified for a period of about 23 years. He started as an office boy with the Carnegie Steel Co. and was with that company 17 years, reaching the position of confidential assistant to D. G. Kerr of that company and having charge of the company's ore and other raw materials purchases. He left the Carnegie company in 1913 to become assistant to William H. Donner, then president of the Cambria Steel Co., and when that company was amalgamated with the Midvale Steel & Ordnance Co., he became assistant to President Dinkey. Mr. Black was regarded as an authority on ores. He was a member of the American Iron and Steel institute and the Western Engineering society; also of the Duquesne and several other clubs in Pittsburgh.

J. C. Branard, Swetland building, Cleveland, agent for the General Steel Co., Milwaukee, died Oct. 9 of heart trouble.

Wm. B. Dayton, founder of W. B. Dayton & Son, Brooklyn, N. Y., manufacturers of tinware and furnaces, died in his home in that city, Oct. 17, aged 89.

Samuel M. Hayes, aged 24, assistant treasurer of the Hydraulic Pressed Steel Co., Cleveland, died in Lutheran hospital that city, Oct. 19, following an operation.

John J. Smart, aged 43, director and second vice president of the W. J. Crouch Co., 68 William street, New York, which recently was merged with Rownson, Drew & Clydesdale, Ltd., died of influenza Oct. 20.

Edward Randolph, aged 47, head of the Balbach Smelting & Refining Co., Newark, N. J., whose home was at Hotel Britton Hall, New York City, died suddenly at the company's plant, Oct. 12, of apoplexy.

Herbert W. Drew, president of the Northern Railway Supply Co., Chicago, a resident of Evanston, died of pneumonia in Washington, D. C., recently where he was engaged in war work for the goverment.

Thomas M. Burke, president of the Peters Creek Gas & Coal Co., and superintendent of the hammers of the Firth-Sterling Steel Co., died at his home in McKeesport, Pa., Oct. 17. Mr. Burke was 37 years old and a native of Lyons, N. Y.

Robert M. Dixon, president of the Safety Car Heating & Lighting Co. and the Pintsch Compressing Co., died suddenly Oct. 16 at his home in East Orange, N. J., from heart disease. Mr. Dixon was a member of the East Orange city council for six years.

Harry O'Neil Murphy, treasurer of the Union Electric Steel Co., Pittsburgh, died at Watkins Glen, N. Y., Sept. 7. Mr. Murphy was one of the younger of the active steel manufacturers of Pittsburgh and helped to organize the company of which he was treasurer.

H. H. Roehl, treasurer of the Optenberg Iron Works, Sheboygan, Wis., died at his home in that city, Oct. 17,

HERBERT F. BLACK

after a few days illness of Spanish influenza. He was born in 1886, spending his entire life in Wisconsin and became identified with the Optenberg Iron Works about eight years ago.

William Allis, aged 69 years, son of the late E. P. Allis, died Oct. 10 in Milwaukee. He succeeded his father as president of the E. P. Allis Co., continuing until the consolidation, which resulted in the formation of the Allis-Chalmers Co. At that time he was made chairman of the board of directors, filling that position for several years.

Charles F. Forster, 335 South Grove avenue, Oak Park, Ill., president of the Forster-Waterbury Malleable Iron Works, Franklin Park, Ill., died Oct. 15 of a complication of diseases. He was for many years with Carnegie Steel Co., at the Homestead Steel Works, Homestead, Pa.; but later was with the Iroquois Furnace Co., at South Chicago, where he remained until he became affiliated with the Forster-Waterbury company.

Lieut. T. J. Moran, United States Medical corps, formerly connected with the medical department of the Carnegie Steel Co. and the Frick Coke Co., as an eye specialist, died at Camp Greenleaf, Fort Oglethorpe, Ga., on Oct. 17. Dr. Moran was born in Uniontown, Pa. He was graduated from Georgetown university in 1901 and from the University of Pennsylvania in 1904. He was 37 years old.

George R. Casey, who for some time has been affiliated with the steel sales department of the Federal Export Corp., 42 Broadway, New York, died Oct. 3 at the Post Graduate hospital, New York, following an attack of pneumonia. Mr. Casey was a native of Johnstown, Pa., and for a number of years was connected with the Cambria Steel Co., in that city. Later, he was employed in the sales office of the Midvale Steel Co., Philadelphia.

Robert A. Parke, 62 years old, at one time New York representative of the Westinghouse Airbrake Co., died at his home in Pittsburgh on Sept. 30. He was graduated as a civil and mechanical engineer from Cornell university in 1879 and later entered the employ of the New York, Ontario & Western railroad as superintendent of bridges and buildings. Subsequently he became interested in mining properties in Arizona and in Canada. His brother, F. H. Parke, is connected with the Westinghouse Airbrake Co.

H. J. Klaer, vice president of the Penn Seaboard Steel Corp., and one of the leading young men in the eastern iron and steel industry, died at the home of his father-in-law, Senator Sproul, at Lapidea Manor, near Chester, Pa., Oct. 15, as briefly noted in the Oct. 17 issue. He was a victim of pneumonia, which developed from influenza contracted Oct. 6. Mr. Klaer held a commission as captain of company G, first regiment, Pennsylvania reserve militia. He was born in Milford, Pa., 30 years ago and was a son of Judge Jacob Klaer. He received his preliminary education at Blairsville academy and graduated in chemistry from the University of Pennsylvania in 1909.

John P. Hopkins, chairman of the board of directors of the Independent Pneumatic Tool Co., Chicago, and former mayor of Chicago, died in that city, Oct. 13, after a short illness of influenza. He was born in Buffalo in 1858, moved to Chicago in 1880 and became a machinist with the Pullman Palace Car Co. He later went into a general merchandise business for himself as a partner in the firm of Secord & Hopkins, Pullman, Ill. Mr. Hopkins served the un-expired term of Carter H. Harrison, Sr., as mayor of Chicago in 1893-94 and was several times chairman of the Democratic national committee. In 1905 he became interested in the Independent Pneumatic Tool Co., being one of its organizers and its largest stockholder.

Bethlehem Gives Labor the Ballot

Representation Plan Similar to That Adopted by Midvale Now Being Installed—Employes to Elect Representatives to Deal With All Labor Problems—Management Represented on Joint Committees

DEMOCRACY in industry has received fresh impetus with the announcement of the Bethlehem Steel Corp., this week that it has established a system for the representation of employes in the plants of the corporation and its subsidiaries. By this system employes are given a voice in regard to the conditions under which they shall labor, an orderly method is provided for the adjustment of differences and problems are to be anticipated and avoided so that the harmonious operation of the institution will not be interrupted. The general outlines of the system follow that recently adopted by the Midvale Steel & Ordnance Co.

Contact between management of the corporation and the employes is accomplished in a simple, expeditious manner. On the side of the employes there is, in sequence, the employes' representatives, the chairman and secretary of the employes' representatives, the general joint committee on appeals and various committees of employes' representatives dealing with separate problems. On the corporation's side, first there is the stockholders and directors, next the management and then the management's representative appointed to keep in touch with the various committees. The duty of the management's representative is to keep the committees informed as to the attitude of the management on the problems considered and to keep the management informed as to decisions of the committees.

Problems concerning the individual employe or groups of employes are taken up in the following manner: An employe who feels himself aggrieved first presents his claim to his foreman, either in person or through one of his representatives. If the employe fails to obtain a satisfactory adjustment he or his representative may appeal to the superintendent, next to the management's representative, then to superior officers of the corporation, and, failing there, he may carry his case to a general joint committee on appeals. If the matter is not settled he may appeal to the president of the corporation, and if the decision is unsatisfactory the employe may demand and obtain arbitration, both sides being bound by the result.

May Belong To Unions

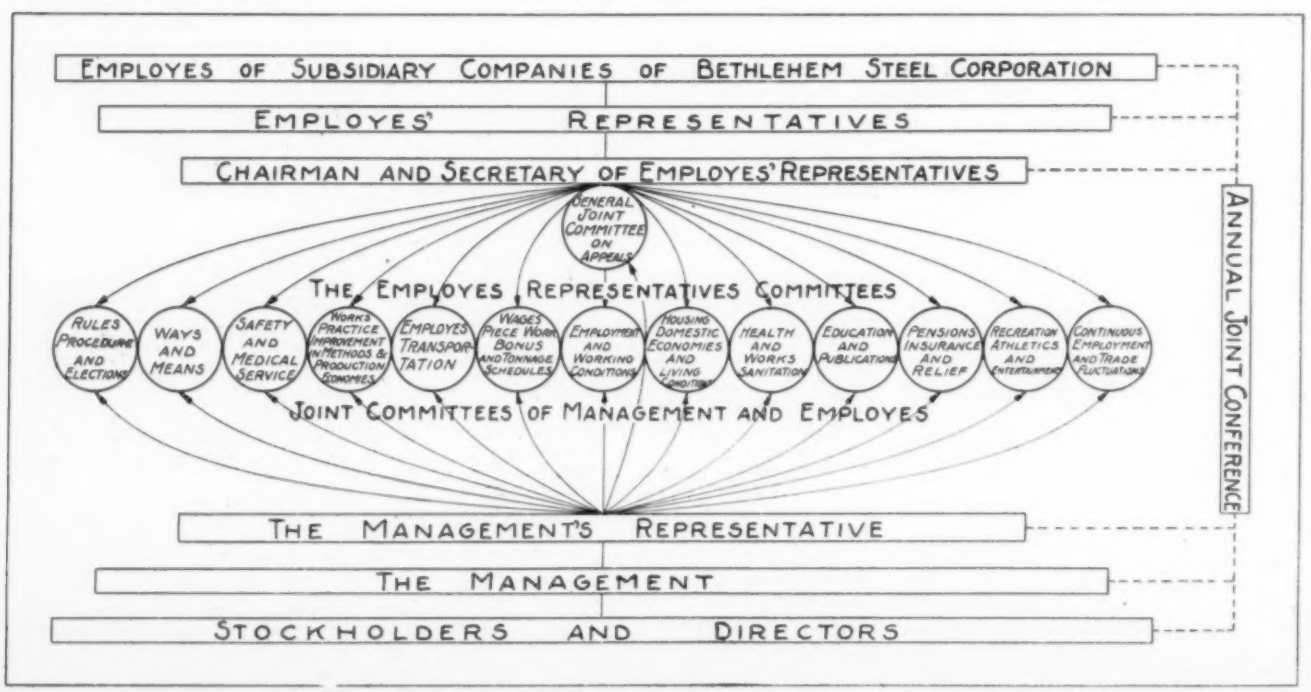
The system does not abridge or conflict with the right of employes to belong to labor unions and the independence of the employes' representative is guaranteed by a clause which provides that he may, if he believes himself discriminated against, appeal to the state department of labor or the secretary of labor of the United States, the findings of either the state department or the secretary of labor to be binding upon both parties to the dispute.

In the first election employes who have been on the corporation's payroll 30 days or more will be entitled to vote; thereafter only those who have been on the payroll 60 days prior to the date fixed for nominations will be entitled to vote. Any employe over 21 years of age, who is an American citizen or who has taken out his first citizenship papers and who has been employed by the corporation six months will be entitled to serve as a representative.

Plants employing under 1500 employes will be allowed one representative for each 100 employes; plants employing 1500 to 10,000 will be allowed one representative for each 200 employes and plants employing more than 10,000, one representative for each 300.

Nominations and elections will be held semiannually ,in October and April, one-half of the total number of representatives to be chosen at each election. Representatives will be elected for a term of one year. At the first election, however, the full number of representatives will be elected, one-half of whom will retire at the next election, or at the expiration of six months. The plan provides in detail for the method of nominations and elections.

After each election the representatives will elect a chairman, a secretary, a general committee and a committee on rules and such other committees as are found necessary by the committee on rules for the consideration of the following subjects: Ways and means; safety and prevention of accidents; practice, methods and economy; employes' transportation; wages, piece work, bonus and tonnage schedules; employment and working conditions; housing, domestic economies and living conditions; health and works sanitation; education and publications; pensions and relief; athletics and recreation; continuous employ-

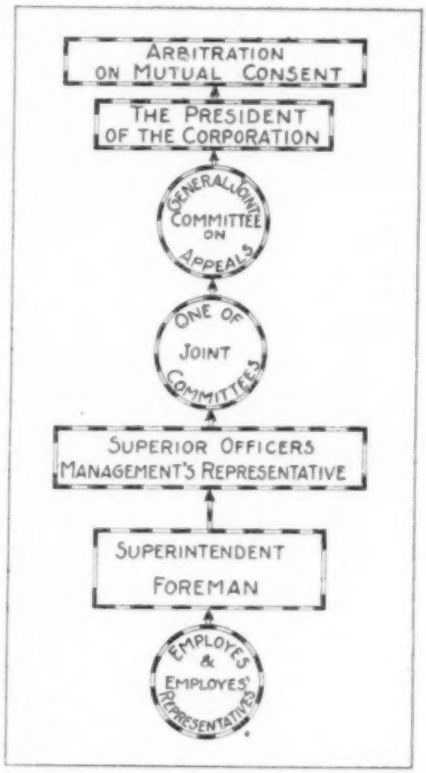

EMPLOYES OF SUBSIDIARY COMPANIES OF BETHLEHEM STEEL CORPORATION
EMPLOYES' REPRESENTATIVES
CHAIRMAN AND SECRETARY OF EMPLOYES' REPRESENTATIVES
GENERAL JOINT COMMITTEE ON APPEALS
THE EMPLOYES REPRESENTATIVES COMMITTEES
RULES PROCEDURE AND ELECTIONS
WAYS AND MEANS
SAFETY AND MEDICAL SERVICE
WORK'S PRACTICE IMPROVEMENT IN METHODS & PRODUCTION COMPANIES
EMPLOYES TRANSPORTATION
WAGES PIECE WORK BONUS AND TONNAGE SCHEDULES
EMPLOYMENT AND WORKING CONDITIONS
HOUSING DOMESTIC ECONOMIES AND LIVING CONDITIONS
HEALTH AND WORKS SANITATION
EDUCATION AND PUBLICATIONS
PENSIONS INSURANCE AND RELIEF
RECREATION ATHLETICS AND ENTERTAINMENT
CONTINUOUS EMPLOYMENT AND TRADE FLUCTUATIONS
JOINT COMMITTEES OF MANAGEMENT AND EMPLOYES
ANNUAL JOINT CONFERENCE
THE MANAGEMENT'S REPRESENTATIVE
THE MANAGEMENT
STOCKHOLDERS AND DIRECTORS

HOW CONTACT IS ESTABLISHED UNDER THE BETHLEHEM PLAN BETWEEN LABOR AND MANAGEMENT

ment and condition of industry. Each committee will be composed of five members.

The plan also provides for joint committees consisting of the committees of employes' representatives with additions of representatives of the corporation, who may equal but not exceed in number the employes' representatives. The general committee when thus jointly composed will act as a committee on appeals.

Regular meetings of the committees will be held once a month and on alternate months the committees will meet as joint committees, the corporation's representatives being in attendance. All of the employes' representatives will meet with representatives named by the corporation once


ARBITRATION ON MUTUAL CONSENT
THE PRESIDENT OF THE CORPORATION
GENERAL JOINT COMMITTEE ON APPEALS
ONE OF JOINT COMMITTEES
SUPERIOR OFFICERS MANAGEMENT'S REPRESENTATIVE
SUPERINTENDENT FOREMAN
EMPLOYES & EMPLOYES' REPRESENTATIVES

STEPS IN THE BETHLEHEM PLAN FOR SETTLEMENT OF GRIEVANCES

a year. Any method of procedure may be amended by two-thirds vote of the entire membership of the joint committee on rules or by concurrent majority vote of the employes' representatives and of the representatives of the management at an annual meeting.

The spirit of the plan is shown by the emphasis placed on rules guaranteeing the independence of representatives. Every safeguard is thrown about his rights to act freely in good faith in the interests of the employes.

The war industries board has offered the services of 10 women employment managers to the manufacturers in the Youngstown district. The offer developed the fact that the manufacturers have already provided for the employment and welfare of women, some of them employing matrons to assist them. The concensus of opinion seems to be that there is no need as yet for the women managers.

Farm Tool Men Back War

Release Huge Tonnage of Material for Ships and Army—Iron and Steel Price Questions Discussed at Annual Meeting

CHICAGO, Oct. 19.—Two ideas ran through all the proceedings of the twenty-fifth annual convention of the National Implement and Vehicle association at the Congress hotel this week. One was a note of patriotism and determination to serve the government to the best purpose, while the other was appreciation of the friendly relations and helpful co-operation of the war industries board and other government agencies charged with making the best use of the country's resources.

In his annual report C. S. Brantingham of the Emerson-Brantingham Co., Rockford, Ill., president, named among the important developments affecting the industry the federal control of railroads "permitting a heavy advance in freight rates that will cost the industry millions of dollars," and the war industries board's recent curtailment of the supply of materials to the industry to the extent of 25 per cent. He said:

"This industry uses annually approximately 1,200,000 tons of steel and 800,000 tons of pig iron. A saving of 25 per cent on these two metals amounts to 500,000 tons. Edward N. Hurley, head of the shipping board, recently stated that it requires from 2500 to 3000 tons of steel and pig iron for each ship. Also, that each ship will maintain 3000 to 4000 men on the other side with food, ammunition, and all necessary supplies. Therefore, the above releasing of 500,000 tons by this industry to be used for war purposes, if all applied to the building of ships, would furnish materials necessary for 200 ships; and, if each ship will maintain 3000 to 4000 men on the other side, the material that this industry is releasing would maintain 600,000 to 800,000 men for one year. This certainly is an object worth working for."

Oppose Price Increases

The farm implements committee in its report said:

"In June, when the prices of steel were established for the third quarter of 1918, the basing point of delivery was changed from Chicago to Pittsburgh, thereby increasing the price of steel approximately $5 per ton to all western manufacturers, on many kinds of steel, and over $5 per ton on others. The embarrassment to the industry because of this change, which involved an average of upwards of $5 per ton on approximately 1,200,000 tons per year, or over $6,000,000, was apparent. Your committee presented the situation to the department of agriculture and the war industries board, which resulted in a conference with the steel manufacturers and a modification of prices covering in the main this advance, notice of which has been sent to all members of the industry in F. I. C. Circular No. 18 dated Sept. 23, 1918.

"On or about Aug. 13, the malleable iron manufacturers changed from an average price for malleables to a classified price, which change if permitted to stand would increase the cost to this industry upwards of $100 a ton, which on the estimated tonnage of 200,000 tons, amounts to approximately $20,000,000 about 60 per cent of which is purchased from outside malleable makers. Your committee believes this advance in price is unwarranted, and will have a very detrimental effect on the industry unless remedied. Negotiations have been carried on with representatives of the malleable foundries; but the matter at the time of writing this report has not been adjusted."

The following message was received from Bernard M. Baruch, chairman of the war industries board, to which suitable response was made:

"We are reaching the top of the hill. The road has been long and the burden heavy. The hardest part lies straight before us. To get over the peak, and get over in a way to make certain that our climb has not been in vain, requires, now, more than ever, the united effort of every man, woman and child in the country. American business has proven itself worthy of the American spirit. It has asked for the chance of service and ignored the question of profit."

Supplies May Be Reduced

It was stated that this is almost the only industry which has been allowed to handle the detail of its lessened raw material supply without interference from Washington. Some industries which have resisted curtailment have been met by arbitrary cuts as high as 75 per cent. Although much has been done by eliminating unnecessary styles and duplications, word has been received that a further cut will be asked and that about 10 per cent additional elimination will be accomplished. Officers for the next year were elected as follows: President, G. A. Ranney, International Harvester Co., Chicago; chairman executive committee, H. M. Wallis, J. I. Case Plow Works, Racine, Wis.; executive committee, W. H. Stackhouse, French & Hecht, Springfield, O.; A. B. McLean, Roderick Lean Mfg. Co., Mansfield, O.; William Black, B. F. Avery & Sons, Louisville, Ky.; J. B. Bartholomew, Avery Co., Peoria, Ill.; H. J. Hirshheimer, LaCrosse Plow Co., LaCrosse, Wis.; F. G. Allen, Moline Plow Co., Moline, Ill.; R. V. Board, Kentucky Wagon Mfg. Co., Louisville, Ky.; Willard Z. Carr, American Speeding Machine Co., Richmond, Ind.; F. R. Todd, Deere & Co., Moline, Ill.; E. J. Gittins, J. I. Case Threshing Machine Co., Racine, Wis.; U. G. Orendorff, Parlin & Orendorff Co., Canton, Ill.

The Interstate Brass Co., 11 South Desplaines street, Chicago, has increased its capitalization from $10,000 to $90,000.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

C. B. CUSHWA has been appointed general superintendent of finishing mills by the Brier Hill Steel Co., Youngstown, O., a newly-created position. Mr. Cushwa has been general superintendent of the Youngstown Iron & Steel Co., and its successor the Sharon Steel Hoop Co., Youngstown, for the past 17 years and is one of the best known sheet and plate mill operators in the country. He now has charge of 28 sheet mills at the Brier Hill plant which have an annual production capacity of about 225,000 tons. When they are placed in operation, the company's new 32 x 84-inch tandem and 38 x 132-inch 3-high plate mills which are expected to produce about 30,000 tons of finished material will likewise be under his direction. Warren F. Perry, who on Nov. 1, will assume his duties as industrial engineer for the Brier Hill company, will be head of a new department having in charge safety, welfare, claims, pensions, secret service and employment work. For many years, he was assistant to Thomas MacDonald, general superintendent of the Carnegie Steel Co.'s mills in the Youngstown district, and later served in the same capacity to General Superintendent J. H. Grose. For some time past, however, Mr. Perry has been traffic manager for the Carnegie Steel Co. His experience as member of the Youngstown board of education will be of assistance to him in his new connection.

Isaac M. Scott, president of the Wheeling Steel & Iron Co., Wheeling, W. Va., has been elected president of the Wheeling chamber of commerce.

E. P. O'Rourke, who for 23 years has been assistant superintendent of the Port Huron Engine & Thresher Co., Port Huron, Mich., has been made factory manager.

C. D. Morton has resigned as sales engineer for the Page Steel & Wire Co., New York, to become captain in the general engineers' depot of the United States army at Washington.

Thomas and William Mellow, proprietors of the Liberty Foundry, St. Louis, have purchased the plant of the Gravois Foundry & Mfg. Co., that city. The two plants will continue to be operated separately.

Prescott Bigelow, Jr., secretary of the Boston real estate exchange, has been elected assistant secretary of the Wright-Martin Aircraft Corp., and will be located in New Brunswick, N. J., during the war.

Henry A. Butler, who has been in charge of the order department of the Youngstown Sheet & Tube Co., Youngstown, O., has been accepted for overseas service in the Red Cross. He will sail for France within a few days.

S. W. Baker was recently appointed manager of the extra work department of the Lima Locomotive Works, Inc., Lima, O., and M. K. Tate was appointed manager of the service department.

Clarence F. Berg has been placed in charge of the branch warehouse at Worcester, Mass., recently established by T. P. Kelly & Co., New York, manufacturers of foundry facings and supplies.

C. B. CUSHWA

J. F. Shea has resigned as foreman of the pattern shop operated by the Lake Torpedo Co., Bridgeport, Conn. He has been made works manager of the Delta Machine & Foundry Co., Brooklyn.

J. Leichman was recently appointed superintendent of the foundries operated by the Rathbone-Sard & Co., at Albany, N. Y., and Aurora, Ill. Mr. Leichman formerly was affiliated with the American Locomotive Co., Schenectady, N. Y.

Theodore H. Millington, formerly with the General Motors Co., Detroit, and Charles W. Chapman of that city, have acquired control of the Michigan Press Co., Ypsilanti, Mich., and are preparing to manufacture a 4-wheel tractor.

George H. Aykroyd, former superintendent of the rolling department of the Pittsburgh Crucible Steel Co., Pittsburgh, has been made superintendent of the 12 and 18-inch mills of the Saucon plant of the Bethlehem Steel Co., South Bethlehem, Pa.

C. H. Booth, former chairman of the board of directors of the United Engineering & Foundry Co. and still a member of that board and of other important industrial concerns, has been named chairman of Mahoning chapter of the American Red Cross at Youngstown.

S. H. Squier Jr., has been placed in charge of the Chicago office of the Milwaukee Electric Crane & Mfg. Co., Milwaukee, recently established at 604 Fisher building. The George R. Cooley Co., Seattle, has been made the Milwaukee company's western agent.

Lloyd H. Atkinson has resigned as vice president of the Air Reduction Co., 120 Broadway, New York. Mr. Atkinson has been in poor health for sometime as a result of overwork and will take an extended vacation before engaging in one of the war service activities.

Charles B. Phillips, who for several years has been connected with the New Castle, Pa., plant of the Carnegie Steel Co., has been appointed superintendent of the intelligence department of the ordnance plant now under construction on Neville island by the United States Steel Corp., for the government.

A. E. Brown has been appointed manager of the railroad department of the Truscon Steel Co., Youngstown, O. He formerly was general agent of the Chicago & Alton railroad at Detroit, Mich. Prior to that he was employed in a similar capacity by the Denver & Rio Grande and the Western Pacific railways in Detroit.

M. Wentworth Hart has been promoted to the position of assistant purchasing agent of the New Departure Mfg. Co., Bristol, Conn., to succeed M. J. Kenyon resigned. Six years ago he joined the New Departure organization as an operator in the drilling and smelting department and subsequently was a clerk in the purchasing department.

W. C. Anderson has retired as president of the Anderson Electric Car Co., Detroit, to become chairman of the board of directors. For 30 years, he has directed the operation of the company's plants in Detroit and Cleveland. He is succeeded by M. S. Towsen, formerly general manager of the Cleveland plant. The company's plants are being enlarged.

E. L. Tuck, formerly superintendent for T. McAvity & Sons, Ltd., St. Johns, N. B., Canada, has been engaged by the Dayton Molding Machine Co., Dayton, O., in an important sales capacity. Mr. Tuck will cover middle western territory. He has had considerable experience in the manufacture of semisteel shell for both the United States and Canada, together with a wide general experience in foundry practice.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

LIEUT. COL. ROBERT P. LAMONT, who, in civil life, was president of the American Steel Foundries, has been made chief of the procurement division of the army ordnance department, Washington, D. C., succeeding Brig. Gen. Samuel McRoberts, who, it has been announced by Maj. Gen. C. C. Williams, chief of ordnance, is to undertake important work on the staff of the chief ordnance officer with the American expeditionary forces in France. Lieutenant Colonel Lamont was commissioned Feb. 4, 1918, and has been at the head of the raw materials section of the procurement division. General McRoberts in civil life was executive manager of the National City bank of New York.

E. F. Parks has been appointed general superintendent of the plant of the Universal Winding Co., Providence, R. I., to succeed W. A. Booth, resigned.

Alfred C. Bell of the Wisconsin Bridge & Iron Co., Milwaukee, was elected president of the Society of Iron and Steel Fabricators of Milwaukee at its recent annual meeting. William Hackendahl of the Hackendahl & Schmidt Co., was made vice president, while E. F. Zuleger, Worden-Allen Co., and Robert W. Reed, Lakeside Bridge & Steel Co., were re-elected secretary and treasurer, respectively.

Charles E. Goodnow, formerly assistant sales manager of the electrical and special wire department of the American Steel & Wire Co., and more recently identified with building construction work for the army and navy in Washington and Brooklyn, now is affiliated with the Page Steel & Wire Co., 30 Church street, New York, to sell and render service on iron welding rods and electrical wire.

C. A. Olsom, of the Emergency Fleet corporation's production staff, has been transferred from Philadelphia to the new plant erected by the Laursen Auto Gear Shift Co., Eau Claire, Wis., for the manufacture of hydraulic gear-shifting devices for motor vehicles. The plant will be devoted to the execution of government contracts for small parts for gun mounts for coast defense and battleships.

Harry Urban has been made general manager of the Woodward Iron Co., Birmingham, Ala., and E. J. Best has been appointed chief engineer. Mr. Urban has been superintendent of the by-product coke plant of the Tennessee Coal, Iron & Railroad Co., at Fairfield, Ala., for some time. Mr. Best formerly was with the Tennessee Coal, Iron & Railroad Co., but latterly has been affiliated with the Algoma Steel Co., Sault Ste Marie, Canada.

W. F. Furman, formerly with the American Locomotive Co., New York, now has charge of the New York office at 30 Church street, of the Le Moyne Steel Co., Pittsburgh. The company's Detroit office at 66 Larned street is in charge of A. G. Cappel, formerly with the Braeburn Steel Co., while William C. Straub, formerly connected with the Swedish Iron & Steel Corp., is Cleveland district manager, with offices in the Leader-News building. Alan F. Harden,

ROBERT P. LAMONT

also formerly with the Swedish Iron & Steel Corp., is connected with the New York office, but has headquarters at Hartford, Conn.

M. E. Farr has been re-elected president of the American Shipbuilding Co., Cleveland, at the annual meeting recently. Alfred G. Smith, operating manager, was elected third vice president and W. H. Gerhauser was made fourth vice president. Other officers re-elected were: First vice president, James E. Davidson; second vice president and secretary, Ora Fish; controller, Arthus G. Potter; treasurer and assistant secretary, John S. Gorman; assistant treasurer, H. F. Pankhurst; general counsel, H. A. Kelly.

Phillips Wesley has been appointed manager in charge of the oxyhydrogen plant and sales office at Pittsburgh of the International Oxygen Co., 115 Broadway, New York. Jack Heller, who has been associated with L. Heller & Sons, New York, for some time, has joined the New York sales force of the International company to succeed Mr. Barnitz. George Quelch, a staff engineer of the International company sailed recently for England to supervise the installation of unit oxyhydrogen generators for the British admiralty.

A. E. Brown, formerly general agent of the Chicago & Alton railroad at Detroit, has been made manager of the railroad department of the Truscon Steel Co., with headquarters at Chicago.

M. V. Bailliere, formerly mechanical engineer with the New York Central lines, has become contracting engineer for the Roberts & Schaefer Co., at Chicago, succeeding Clyde C. Ross, who has been made contracting manager.

Jarvis Williams, of the Remington Arms-Union Metallic Cartridge Co.; Willis F. Hobbs, of the Bridgeport Hardware Co., and Guy C. Miller, of the Bridgeport Brass Co., have been named by manufacturers of Bridgeport, Conn., as their representatives to sit with three labor men on the community board of mediation and conciliation to settle any disagreements which may arise among the employes of the 60 or more factories in that city.

A. F. Knobloch, vice president and works manager of the Cleveland Tractor Co., Cleveland, has gone to Washington to become first assistant to L. J. Horowitz in the ordnance department. He will have supervision of the manufacture of tanks and tractors. For 15 years, Mr. Knobloch was vice president and general manager of the Northway Motor & Mfg. Co., Detroit, and he later held a similar position with the Cole Motor Co., Indianapolis. He became affiliated with the Cleveland Tractor Co., in August, 1917.

H. C. Thomas, affiliated with the United Alloy Steel Corp., Canton, O., since June 1, has been promoted to the position of assistant general superintendent. He formerly was chief chemist and metallurgist with the Alan Wood Iron & Steel Co., and subsequently was chief chemist of the Illinois Steel Co., at its Gary, Ind., plant, where he built and equipped the chemical and metallographis laboratories. After a service there of two years, he was made assistant general superintendent, which position he held for four and one-half years prior to joining the United Alloy Steel organization. Harry Geltz, who has been assistant purchasing agent of the corporation for two and one-half years, has been appointed secretary to E. L. Hang, vice president and general manager. George S. Kurtz, former assistant purchasing agent for the Forged Steel Wheel Co., Butler, Pa., and R. L. Andrews, formerly with the Hardware & Supply Co., Akron, O., have been made assistant purchasing agents and F. B. Mulvaney, formerly production manager of the Canton Drop Forging & Mfg. Co., Canton, has been appointed assistant inspection engineer.

Iron and Steel Financial News

Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers

Senate Provides for War Plant Losses

PRELIMINARY estimates indicate that the fourth Liberty loan met with the greatest popular response that the world has ever known. There were nearly 25,000,000 lenders and the loan was oversubscribed. Anything less would have been unlike America.

Before the loan closed, last week, Wall street suddenly staged what was acclaimed as a "victory market." Buying orders poured in from all parts of the country and prices rose in a spectacular fashion that has not been matched since the culmination of the great bull market of the fall of 1916. Mexican Petroleum furnished the chief pyrotechnics, opening last Thursday at 159, advanced to 192 and closed at 182, a net gain of 24½ points. United States Steel common awoke from its lethargy, gaining 4½ points in the day, and the minor steels followed suit.

This rise in the stock market was contrary to the judgment of many authorities here and abroad, who have warned against undue optimism as to an early peace. On the other hand, some bankers were of the opinion that the cheerful spectacle helped the loan along, in that it encouraged investors. Of course, the favorable progress of the war is the reason for the confidence in securities; not the prospects of early peace, but the certainty that even though the enemy prolong the struggle, his complete subjugation is assured.

Wall street has endeavored to discriminate between "peace stocks" and "war stocks." But industry now is so thoroughly on a war basis that all industries are to some extent war industries. The benefits to be derived by any one industry or class of industries in the coming readjustment cannot be determined with any accuracy as yet. They depend in part on the nature of the adjustment and the duration of the change from public to private control. Without doubt, optimism is justifiable now, of all times, but until we have received the enemy's unconditional surrender, a "victory market" seems a little premature.

Provide for Amortization

The senate finance committee last week made a broad ruling in the war revenue bill, as to amortization by which all war plants are embraced in the terms of the law. This takes care of companies that have sustained depreciation by consolidating their production entirely on war manufacturing. The text of the committee's section on this subject follows:

"And to part 1, after section 202, a new section to read as follows:

"Section 203 (a). That as used in this section the term 'net loss' refers only to net losses resulting from either (1) the operation of any business regularly carried on by the taxpayer, or (2) the bona fide sale by the taxpayer of plant, buildings, machinery, equipment or other facilities, constructed, installed or acquired by the taxpayer on or after April 6, 1917, for the production of articles contributing to the prosecution of the present war; and when so resulting means the excess of the deductions allowed by law (excluding in the case of corporations amounts received as dividends from a corporation which is taxable under this title upon its net income) over the sum of the gross income plus any interest received from taxation both under this title and under title 3.

"B. If for any taxable year beginning after Dec. 31, 1916, and not later than Dec. 31, 1918, upon the production of evidence satisfactory to the commissioner that any taxpayer has sustained a net loss, the amount of such net loss shall, under regulations prescribed by the commissioner, with the approval of the secretary, be allowed as a deduction in computing the net income of the taxpayer for the succeeding taxable year.

"C. If for any taxable year beginning on or after Jan. 1, 1918, it appears upon the production of evidence satisfactory to the commissioner that any taxpayer has sustained a net loss, the amount of such net loss shall under regulations prescribed by the commissioner with the approval of the secretary, be deducted from the net income of the taxpayer for the preceding taxable year; and the taxes imposed by this title and by title 3 for such preceding taxable year shall be redetermined accordingly. Any amount found to be due to the taxpayer upon the basis of such redetermination shall be immediately credited or refunded to the taxpayer in accordance with the provisions of section 258. If such net loss is in excess of the net income for such preceding taxable year, the amount of such excess shall under regulations prescribed by the commissioner with the approval of the secretary, be allowed as a deduction in computing the net income for the succeeding taxable year."

The committee removed from the bill the provision imposing the income tax on the President and federal judges. The tax on army officers remains with the limit of $3500 of income. The committee discussed the latter clause with an avowed effort to find some way to grant an exemption to officers of the army and navy serving in the field and abroad, but arrived at no conclusion other than the house provision.

Republic's Earnings Drop With Increased Taxes

An increased deduction for taxes is the main factor contributing to the reduction of earnings of the Republic Iron & Steel Co., Youngstown, O. In the third quarter of 1918, these earnings compare unfavorably with those of the previous quarter as well as with the corresponding period in 1917. Disclosed by the report just issued, the company's net earnings were $2,829,555, after the deduction of $1,382,806 for maintenance and repairs and an unannounced sum for excess profits taxes. For the second quarter of this year, the net earnings were $3,675,444, while for the nine months ended Oct. 1, 1917, before tax provision, they totaled $6,682,425.

Referring to the deduction for taxes Chairman Tapping states: "The board of directors authorized a deduction from the net profits for the quarter of an amount in excess of that required by existing tax laws, as a provision for increased excess profits taxes suggested by pending legislation." These results, it is pointed out, are subject to change and adjustment at the end of the year when accounts are finally audited.

Unfilled orders on hand Sept. 30, finished and semifinished, were 315,164 tons as compared with 299,737 tons June 30. The earnings of the company on common for the quarter were 6.15 per cent a share as compared with 9.44 per cent in the second quarter.

As the company made only a nine months' report at the close of the third quarter last year, no third quarter detailed income comparison can be made. However the nine months comparison is sufficient to show the effect of the pressure of war conditions, high wages and material costs and unprecedented taxes, upon the earnings of the steel companies.

Notwithstanding these things the Republic Iron & Steel Co. shows a surplus for the nine months after all charges and dividends, of $5,598,762. This amount increases the total surplus of the company to above $35,-

000,000. The surplus for the corresponding period last year was $10,509,243. Then the reserve for war taxes was $8,636,605. What it is this year the company does not divulge. The nine months comparative income account follows:

	1918	1917
Net earnings	$10,032,720	$23,311,988
Other income	515,821	190,533
Total income	10,548,550	23,502,521
Depreciation and renewals	1,853,997	1,249,737
Interest	559,694	580,841
Excess profits	.....	8,636,605
Net profits	8,134,859	13,045,338
Common dividends	1,223,595	1,233,595
Preferred dividends	1,312,500	1,312,500
Surplus	5,598,762	10,509,243

Wired Demands for Steel Profit Mere Routine

Telegrams sent broadcast to all producers of iron and steel by W. B. Colver, chairman of the federal trade commission, demanding a special financial report, to be wired promptly to Washington, proved to be only a "false alarm" when an explanation for the extraordinary haste urged was sought at the office of the commission. Colver's message was as follows:

Please send by wire for your company for each of the several quarters of your fiscal years 1915, 1916, 1917 and 1918, indicating each period the following figures: First, net income from operations; second, other net income; third, total net income. Also deductions from net income show separately thus: First, depreciation not in cost; second, federal income and excess profit taxes; third, interest on bonds; fourth, dividends; fifth, other deductions itemized; sixth, total deductions; seventh, balance carried to surplus. Also give amount of your capital stock, bonds and surplus separately at beginning of each business year indicated above. These figures urgently required. Please wire promptly.

To say that the producers were surprised by this telegram and especially by Colver's request that the information be wired would be putting it mildly. They pointed out that it would require several days to compile the report and in many instances the work would require the assistance of special auditors. And then they considered the chances for error in sending a long report, including hundreds of figures, by telegraph at a time when the wires are overloaded with messages.

Inquiry at the office of the commission in Washington by a representative of THE IRON TRADE REVIEW developed the fact that there was no especial need of hurry in compiling or sending the reports to Washington.

"Merely a routine matter," it was said. "The commission has been engaged in gathering this data to supplement information it has been compiling for more than a year."

Ford Company Expands Its Surplus by $43,637,821

Detroit, Oct. 21.—An addition of $43,637,821 to surplus is reported by the Ford Motor Co., for the fiscal year ending July 31. This is equivalent to $2,181.84 a share on the 20,000 shares of capital stock of the par value of $100. Total surplus for the fiscal year was $175,242,728, as compared with $131,604,907 at the end of the previous year.

Total resources of the company are placed at $203,749,460 an increase of $37,774,458 as compared with resources July 31, 1917. Current assets aggregate $137,228,134, compared with $112,089,824 for the previous year while current liabilities are $16,603,891, compared with $25,936,159 a year ago.

Net working capital of $120,624,243 is revealed in the statement as compared with $86,153,665 at the close of the previous year. In the list of assets real estate is placed at $37,117,363; machinery and equipment, $79,335,982; materials in process, $44,522,562; cash and receivables, $91,471,851; patent rights, $67,981; inventories, $1,231,906, and investments, $1815. Liabilities include capital stock of $?,000,000; accounts payable, $10,653,327; accrued expenses, $5,950,564; depreciation reserve, $9,902,841, and surplus of $175,242,728.

The item of fixed assets including real estate, machinery and equipment, totaling $66,453,345 indicates an increase of $12,634,804 in plant investment during the year. Cash and notes receivable at $91,471,851 show an increase of $26,852,804 during the year while at the same time the company reduced its total of accounts payable by $9,329,929.

August is Record Month

In the acceptance of over $5,000,000 worth of orders in August, the Allis-Chalmers Mfg. Co., Milwaukee, reached its maximum, under present labor and raw material conditions. Unfilled orders on Aug. 31, totaled $30,856,361. While Uncle Sam is the company's chief customer, outside of large shells, little of the output in the plant is of a distinctly war and not of a peace time character. Shell work represents a little more than 3 per cent of the company's work in process of manufacture and about the same proportion of the total orders booked since Jan. 1 and about 20 per cent of one month's total plant output.

Sales for August aggregated $3,167,442, which broke all previous records. Profit for that month was $1,082,131, with net profits of $407,399, after deducting $590,000 reserve for income taxes, etc. The deduction for taxes is at a rate in excess of $7,000,000 annually, although the company's officials estimate the tax will not exceed $6,000,000. The following is a summary of sales billed, tax reserve and net profit by months for the first eight months of the present year:

Month	Sales Billed	Tax Reserve	Net Profit
January	$ 1,899,971	$ 63,000	$ 36,071
February	1,990,862	74,000	418,769
March	2,698,993	212,000	617,398
April	3,075,799	250,000	628,885
May	3,080,660	400,000	631,162
June	2,054,213	300,000	623,707
July	2,959,148	500,000	450,679
August	3,167,442	590,000	407,399
Totals	$21,954,494	$2,389,000	$4,138,070

The Rodd Co., Century building, Pittsburgh, has been awarded a contract by the department of labor for an office building at the Neville island ordnance plant.

Benzol Active

But Phenol Market Still Awaits Action On Export Licenses

New York, Oct. 19.—Great activity characterized the benzol market during the past week. Consumers came into the market on a larger scale than in any similar period in months. Owing to the fact that prices over the past two or three months have shown a declining tendency, purchases this week mainly were for spot shipment. The prices obtained range from 22 to 27 cents per gallon, depending on the quantity.

The war trade board continues to postpone action on applications for export licenses in phenol. Large quantities of this product are involved. In the meantime, the market continues to be quoted at 42 to 44 cents per pound.

Contract requirements of the drug trade in naphthalin over the coming season are beginning to come under negotiation. Prices quoted on such requirements now are around 12½ cents per pound at producers' plants for balls, and 10 cents for flake naphthalin. Spot naphthalin is quoted at about the same prices.

Substitutes for solvent naphtha are not yet being offered in adequate quantities, but it is expected that the requirements of consumers shortly will be taken care of. The war industries board continues to show a tendency to cut down the quantities of toluol released for commercial consumption. Sales of sulphate of ammonia continue to be made to fertilizer manufacturers, since government requirements are considerably smaller than the present output of this product. It is expected a fair supply will continue to be obtainable by the fertilizer manufacturers and other users. Prices on sulphate of ammonia continue to range from $4.50 to $4.75 per 100 pounds at tidewater.

Coke Oven By-Products

Spot	
Per Gallon at Producers Plant	
Pure benzol	$0.22 to .27
Toluol (on sales sanctioned by government) (tank cars)	1.50
Toluol (on sales sanctioned by government) (drums)	1.55
Toluol (for government)	1.50
Solvent naphtha	no market
Per Pound at Producers Plant	
Phenol	$0.42 to .45
Naphthalin, balls	0.12½
Naphthalin, flake	0.10
Per 100 Pounds at Seaboard	
Sulphate of ammonia (to fertilizer trade)	$4.50 to 4.75
Contract	
Pure benzol	nominal
Toluol	no market
Solvent naphtha	nominal
Per Pound at Producers Plant	
Phenol	nominal
Naphthalin, balls	$0.12½
Naphthalin, flake	0.10
Per 100 Pounds at Seaboard	
Sulphate of ammonia (for commercial use)	no market
Sulphate of ammonia (for government)	$4.50

Shell Contracts Greet Toolmakers

Recent Activity of Ordnance Department Precludes Peace Considerations at This Time —Much Business of Similar Character in Prospect Particularly in the East and in Pittsburgh District—Cleveland Gets St. Louis Business

COUPLED with Marshal Foch's success on the western front, the continued peace drive on the part of the enemy is having anything but a deterrent effect upon the country's production of machine tools for war work. Naturally some conjecturing is being indulged in, as to what will happen to the machine tool trade should a satisfactory peace suddenly be affected. The general conclusion however is that permanent peace is a long way off. Even with the coming of peace, troop demobilization cannot take place for a period in excess of 18 months and in that time of readjustment, a sufficient number of avenues for the disposal of equipment will open up to satisfy the needs of all builders, whose capacities have been overtaxed so long. They will welcome a return to normal times. The shipbuilding, tractor and airplane building industries are expected to maintain war time machine production in peace times, although it is admitted that some builders of single purpose tools for shell and gunmaking will have to convert their product.

To judge the trend of the orders placed, it would appear that peace is nowhere in sight. In the east and elsewhere a greatly increased volume of inquiry for tools for shellwork has marked the past week. The ordnance department has sent out an inquiry for $300,000 worth of hydraulic machinery and other equipment. Inquiries from individual companies portend an intensive shellmaking program ahead. Some of these companies already have shell contracts and some anticipate receiving contracts of that character. Included in the latter are concerns in the east, in Pennsylvania, Ohio, Michigan, Illinois and elsewhere who are looking to Washington for word on the government's 33,000,000 semisteel shell program. Thomas A. Edison, Inc., has been in the market for equipment to manufacture adjusters and golster cases for 75 millimeter shells. The Bartlett-Hayward Co., Baltimore, the Laclede Gas Light Co., St. Louis and several concerns in the Pittsburgh district are inquiring for shellmaking machinery.

An airplane asembling plant, the Rock Island arsenal, and two interests who are making gas shells, are expected to develop further needs for machine tools. The Worthington Pump & Machinery Corp. received a contract for pumps for Ford destroyers and is expected to issue a list of needed equipment. Plate and angle shop equipment is being bought by Robert Dollar Co., Inc., for the shipyard in China, operated for the Emergency Fleet corporation. Railroad inquiry continues spasmodic. The Nickel Plate is understood to have filled its requirements for the time being, while the Pennsylvania continues to buy cranes and to inquire for large numbers of tools for shops west from Pittsburgh to Terre Haute, Ind. The tools are largely for replacement purposes.

Delivery continues fairly prompt on small tools but on large lathes, boring mills, planers, etc., longer time is necessary. Prices continue to advance on grinding machines, the latest being one of about 10 per cent from Grand Rapids, Mich., builders.

The lull in the crane market continues. Among the recent buyers of this type of equipment are the Morgan Construction Co., Worcester, Mass., the Norton Grinding Co., that city, and the Pennsylvania railroad for its Altoona, Pa., shops. Cranes for that road's Marietta shops are expected to be ordered soon. Further ordering for the Neville island ordnance plant proceeds at a slow rate.

Shellmaking Equipment Features the Market

EASTERN machine tool manufacturers during the past few days, have been in receipt of a greatly increased volume of inquiry for various kinds of equipment for shell work. The ordnance department has just brought out an inquiry for more than $300,000 worth of hydraulic machinery and other equipment, and numerous inquiries from individual companies either engaged in or anticipating additional shell work are in evidence. Considerable demand in the east at the present time is for equipment needed in manufacturing adjusters and bolster cases for 75-millimeter shells. Thomas A. Edison, Inc., West Orange, N. J., has recently bought some equipment for this work, having received a new contract for adjusters. The company heretofore has been manufacturing adjusters for larger shells. A large buyer of shellmaking equipment at this time is the Bartlett-Hayward Co., Baltimore, and another Baltimore company is figuring on a large list of tools in anticipation of a contract for manufacturing 12-inch shells. While business is improving, much buying is unquestionably being held up at this time, pending the passage of the deficiency bill in congress. This applies not only to shell contracts, but pistol contracts and other war work.

Included in business likely to develop in the near future is a list of about $100,000 worth of machine tools for the Worthington Pump & Machinery Corp., Harrison, N. J., which is manufacturing pumps for Ford destroyers. Recently the company closed on a small list of tools, including several radial drills. W. H. Gahagan Inc., shipbuilder of Arverne, L. I., N. Y., is buying equipment for a new addition to its yard. Purchases so far have included four vertical punches, two horizontal punches, and one beam bender. The proposed expansion has been made necessary by a government contract for ten 100-foot steel tugs. The company heretofore has been building wooden barges. Another buyer of plate and angle shop equipment during the past week has been the Robert Dollar Co., 17 Battery place, New York, which is equipping a yard at Shanghai, China, for the Emergency Fleet corporation. Among items purchased are six vertical punches, two beam benders, two shearing machines, and two horizontal punches. The American International Ship Building Corp. is also buying some equipment of this description for its correction shop at Hog island, near Philadelphia.

The lull in the crane market continues, with few inquiries coming before makers. The Niles-Bement-Pond Co. has received an order from the Morgan Construction

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Philadelphia Office—603 Widener Bldg. Frank Wallace, District Sales Manager.
Syracuse Office — 621 University Block. T. B. Davies, District Sales Manager
Export Dept.—20 Broad St., New York.

AGATHON
Alloy Steels

Co., Worcester, Mass., for a 20-ton overhead crane, and an order for a 15-ton overhead crane from the Pennsylvania railroad for the Juniata erecting shops at Altoona. An additional 15-ton crane and two 10-ton cranes also have been bought for these shops. Two 50-ton cranes, with 70-foot span, and two 12½-ton cranes, with 80-foot span, are yet to be bought for the Pennsylvania's new shops at Marietta, Pa. The Norton Grinding Co., Worcester, Mass., has recently bought a 10-ton overhead crane from the Pawling & Harnischfeger Co., Milwaukee.

Prospects Vary In Chicago

MACHINE tool dealers in the Chicago district find business continuing at a high rate without special features, large inquiries being lacking at present. Rumors of peace have not affected demand appreciably and all manufacturers appear to be going ahead regardless of possibility of the war demand being withdrawn. Manufacturers in the Cincinnati district report that production is being interfered with somewhat by the prevailing illness, which is preventing full time by workers. Placing of contracts for semisteel shells with western manufacturers is going forward and this is relied on to cause demand for some additional machine equipment. The Rock Island arsenal continues to make some small purchases, but nothing has been done on the lists already prepared on which appropriation is awaited. Apparently the projected plant for the Baldwin Locomotive Works in the Calumet district is being held up at Washington. Information that the Pullman Co. will establish an airplane assembling plant at Pullman, Ill., gives rise to the expectation that some equipment will be needed. Manufacture of gas shells by two large interests in this district also is expected to assist in increasing requirements for shellmaking equipment.

The Milwaukee Electric Crane & Mfg. Co., has received an order for a 25-ton crane with 5-ton auxiliary, 62-foot span, for the Brooklyn navy yard. It also is building a 41-foot 10-ton crane with 3-ton auxiliary and extra trolley for the Hubbard Steel Foundry, East Chicago, Ind. It is building for the Industrial Works, Bay City, Mich., two 10-ton cranes of 26-foot span and two 25-ton, 55-foot span cranes with 5-ton auxiliary.

The James A. Brady Foundry Co., Chicago, is building an addition to its foundry and core oven. The Chicago Pneumatic Tool Co. will build a 5-story reinforced concrete plant at Detroit. The Central Forging Co., Detroit, is building three additional factory buildings. The Michigan Smelting & Refining Co., Hamtramck, Mich., will build a power house. E. F. Goltra, St. Louis, is planning an iron and coke plant with the assistance of the ordnance department. The Skinner & Eddy Shipbuilding Corp., Seattle, is building a pipe shop. The Union Construction Co., San Francisco, is planning considerable construction at Oakland, including a plate and angle shop and compressor house.

No Peace Seen For Two Years

EXTENSIVE government contracts placed during the last week or 10 days, confirm the thought of Cleveland machine tool dealers that peace is not in sight. These contracts cover axles, trucks, tractors, tanks, shells, etc. War effort is going ahead in the northern Ohio district on a large scale, notwithstanding the letter-writing that is going on between Washington and Berlin. One Cincinnati builder of equipment states that with a sudden peace now, would come complete demoralization to his business. This, however, is a radical departure from many expressed convictions on this point. All of these agree that a huge program of readjustment will be presented to the country. These dealers feel that a more or less steady demand for machine tools will be maintained; the tractor requirements of the country for agricultural purposes will be larger than ever; the shipyards will never again cease to be large users of tools; the airplane field has possibilities which none venture to prognosticate; and the rebuilding of many plants in northern France, Belgium and elsewhere, devastated by the Germans in their retreat, will call for much American-made machinery. Foreign trade will likewise be a fruitful field for orders for equipment built in the United States. It is thought that some suffering might accrue to the builder of single purpose machines, such as gun lathes, boring mills, planers, etc., with the cessation of hostilities, but the government is expected to make proper reimbursement. It is believed by many that holders of contracts for shells and guns will be allowed to fulfill their contracts even should the conflict end. Activity on the part of inspectors which it is anticipated would then be more rigid and exacting than ever would perhaps serve as an automatic cancellation. Others feel that work on contracts will be stopped; reimbursements made by the government for expenditures made for special equipment and payment made for that part of the contract fulfilled. Others expect that all contracts placed up to the time peace comes will be fulfilled and if the product is not used, it will be stored for possible future use.

Influenza Curtails Production

The epidemic of Spanish influenza has likewise had the effect of curtailing production; several Ohio builders have been deprived of the services of some of their best men. Those users of equipment, however, who have what is known as "prime government" work, such as shell and gunmaking establishments, automobile plants, etc., continue to pound the dealers with telegrams, telephone calls and letters in an effort to hasten deliveries, and are placing additional orders. These plants are not abating their war effort for one moment and this is explained by the fact that in many cases the equipment for them has been and is being purchased by the government.

Miscellaneous Demand Is Maintained

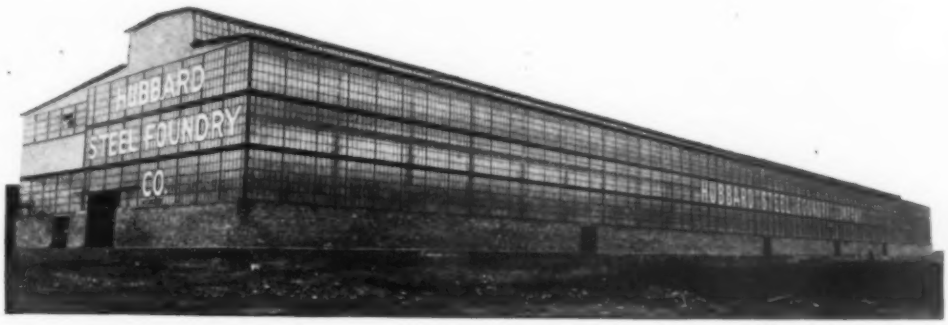
Dealers still complain that buyers too often delay purchases in an effort to obtain better deliveries, and lose the deliveries already offered. This is particularly true in connection with the large machines required in many plants. The Columbia Axle Co., Cleveland, has had to add to its equipment to work out a contract for axles recently awarded by the government. The International Harvester Co., Akron, O., is in the market for equipment including six milling machines. The Glen L. Martin Co., Cleveland, is getting ready for increased production. Among the orders it has placed recently is one for four No. 2 milling machines. The Grant Motor Car Corp., Cleveland, likewise has purchased two milling machines. The Laclede Gas Light Co., St. Louis, which is building two shell plants to cost $3,830,300, has come into the Cleveland market for a large number of tools including lathes, planers, drills, presses, etc. The Olds Motor Works, Lansing, Mich., which is converting its entire plant to produce aircraft and Liberty motors, is spending $1,250,000 for plant additions, machine tools, etc. Its inquiry for equipment calls for 25 or 30 milling machines. The Nickel Plate has made some additional purchases but the Pennsylvania still is issuing inquiries for its shops at Conway and Mahoningtown, Pa., and for Hazelton, O., as well as Terre Haute, Ind.

Used Machinery Market Sees Lull

Used machinery dealers have felt the combined peace and Liberty loan drives. Prospective buyers were faced with the questions how many bonds they could buy outright and to what extent they could tax their credit on future war work to make additional bond purchases. Confronted with a possible peace, they naturally hesitated about buying machine tools. The National Lamp Works of the General Electric Co., continues to enter the market from time to time. It now asks for an 800 or 1000-pound steam hammer, and one swaging machine. The Ohio Reamer Co., Cleveland, is looking for one 6-inch x 32-inch Brown & Sharpe plain grinding machine and a bench drill. Drills and milling machines are wanted by the Standard Equipment Co., Cleveland. The Copeman Laboratories, Inc., Flint, Mich., is inquiring for one 14-inch x 6-foot Le Blond lathe, one 60-inch or longer squaring shear; one punch and one power press; the Swinehart Tire & Rubber Co., Akron, O., wants 24-inch shapers. The United States Piston Ring Co., Cleveland, is in the market for one No. 210 Heald ring grinder and the same machine is required by the Advance Machinery Co., Van Wert, O. The Duncan Co., Toledo, wants a used Morgan Engineering 7-ton double frame steam hammer.

The Babcock & Wilcox Co., Barberton, O., has started work on a machine shop to cost $75,000. Black & Cloawson Co., Hamilton, O., is doubling its capacity for war work by building another shop. The Draper Mfg. Co., Cleveland, is erecting an addition to its machine shop. The American Car & Foundry Co., Buffalo, N. Y., will probably need punching and shearing equipment for its new punch shop. The Modern Tool Co., Erie, Pa., is putting up a $10,000 addition. The Pittsburgh Steamship Co., that city, is building a large machine shop. The

WAR with ROLLING MILL JIM



Say Fellows!—I've been so busy haven't had time to give you any new dope. It's "UNCLE SAM" first, last and all the time these days. Here's to beat the Hun!

So long,

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.

Toledo Shipbuilding Co., Toledo, is building an addition and the Matthews Shipbuilding Co., Rocky River, O., has received the approval of the government on its new shipyard.

Pennsylvania Wants Many Tools

FREQUENT inquiries are reported in the Pittsburgh trade from the Pennsylvania lines west for machines and tools for its shops between that city and Chicago. These inquiries, however, do not call for complete lines and may be said to be largely for replacement purposes. Inquiries from plants working on contracts from the ordnance department are fairly numerous, but the resulting turnover is moderate. On the whole, sellers are not rushed with new business. Whether this is because buyers have covered for the most part on their present needs or because they are waiting to see if the peace talk will amount to anything tangible is not easily determined. Both reasons, however, are offered in explanation for the lack of real activity. Delivery continues fairly prompt on small tools, but on big lines and heavy machinery, makers are too heavily committed to be able to offer short dates. In some districts, deliveries are held up because of the fact that necessary parts are not obtainable. Placing of contracts for the Neville island gun plant requirements proceeds at a slow rate. A disposition exists on the part of those in charge of this plant to make time awards so that deliveries will come when the plant is ready for them. Thus far, aside from the contracts for a few cranes, several gun and shell lathes, presses and accumulators, machinery requirements are largely uncovered. Contracts for semisteel shells are closer to hand since the government now is ready to negotiate; in connection with this work, as bearing on machining tool wants, it is said that the government will provide those plants lacking equipment with the necessary machinery.

Pennsylvania Lines West Issue Further Tool Inquiries

FOR CONWAY, PA.

One combination punch and shear, with double throat not less than 30 inches deep, and capable of punching holes $15/16$ inches in diameter through $1/2$-inch steel.

One cylinder joint facing machine, which will face joints on cylinders from 18 to 30 inches.

One 28-inch rotary valve seat planing machine for planing locomotive valve seats.

One flue cleaning rattler and unloader.

One portable cylinder and valve boring bar, diameter of bar $4 1/2$ inches, length of bar 8 feet, to be equipped with 12, 16, 20 and 24-inch cutter heads.

One 24-inch upright heavy duty drill, to be back geared with positive feed, to drill from 0 to $1 1/4$ inches.

One high speed power hack saw, belt driven, capacity 6-inch x 6-inch.

One belt driven triple head bolt threader for cutting threads on bolts and pipe up to 3 inches.

One 24-inch sliding head vertical drill press with back gears, capable of drilling $1/2$ to $1 1/4$ inches.

One No. 5 high power plain milling machine.

One 28-inch belt driven heavy duty pillar shaper, back geared.

One double and wet drill grinder, capable of sharpening drills from $1/8$ to 3 inches.

One 20-inch universal tool room lathe, four feet between centers.

One spindle centering machine, capacity from $1/2$ to 11 inches diameter.

One 48-inch x 10-foot heavy duty engine lathe.

One 90-inch driving wheel lathe, with compound heads.

One portable valve boring bar, diameter of bar $3 1/2$ inches x 8 feet long, with 6, 8, 12 and 16-inch cutter heads.

One No. $1 1/2$ or No. 2 universal cutter and reamer grinder.

One wet emery grinder, 30-inch diameter, 4-inch face, belt driven.

One universal tool grinder.

One 1500-pound single frame steam hammer.

One 600-ton inclinable hydraulic wheel press.

One 200-ton vertical double deck hydraulic forcing press, with 24-inch stroke.

FOR MAHONINGTOWN, PA.

One No. $1 1/2$ or 2 universal cutter and reamer grinder.

One No. 5 high power plain milling machine.

One double end wet drill grinder, capable of sharpening drills from $1/8$ to 3 inches.

FOR HASELTON, O.

One 36-inch belt driven rip saw with safety guards, tools, wrenches and countershaft.

FOR TERRE HAUTE, IND.

One 600-ton hydraulic driving wheel press, to take wheels up to 90 inches in diameter.

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Factories

LAKEPORT, N. H.—The H. H. Wood & Co., Inc. will build a 4-story, 50 x 50-foot addition to its plant.

BEDFORD, MASS.—The Pfeiffer Bros. Co. has been incorporated to manufacture metal goods with $10,000 capital by Louis Pfeiffer, Immanuel Pfeiffer and R. Wheeler.

BOSTON—Plans for alterations to the forge shop of the Trimont Mfg. Co. are being drawn by C. T. Maine.

BOSTON—Frank G. Coburn has been awarded the contract by the government for a brick, 1-story, 100 x 250-foot immigration station and wharf to cost $250,000 on Marginal street, East Boston, Mass.

BOSTON—The M. P. Brundige Co., Inc. has been incorporated to make elevators, hoisting machinery, etc., with $25,000 capital by M. P. Brundige, James W. Dammerall, Jr., and Charles S. Hopkins.

BOSTON—The Boynton Appliance Co. has been incorporated to make automobile accessories with $30,000 capital by George W. Boynton, Roy J. Foster and M. P. Brown, Quincy, Mass.

CAMBRIDGE, MASS.—The Lever Bros. Co. will build a reinforced concrete 5-story, 75 x 170-foot factory building.

CHELSEA, MASS.—Everlastik, Inc., will build a brick, 3-story, 250-foot long factory, at Spencer and Webster avenue.

EAST CAMBRIDGE, MASS.—The Monarch Metal Mfg. Co. is building a 1-story 64 x 75-foot store house.

EVERETT, MASS.—The Everett Metal Products Co. has been incorporated to make machinery, with $25,000 capital, by Louis I. Beckwith, Boston, Charles A. Peterson, Boston, and A. H. Draper, Medford, Mass.

LAWRENCE, MASS.—The American Woolen Co. will build a concrete and brick, 8-story, 105 x 479-foot mill in the yard of the Washington mill, and a fireproof, 10-story, 155 x 170-foot store house.

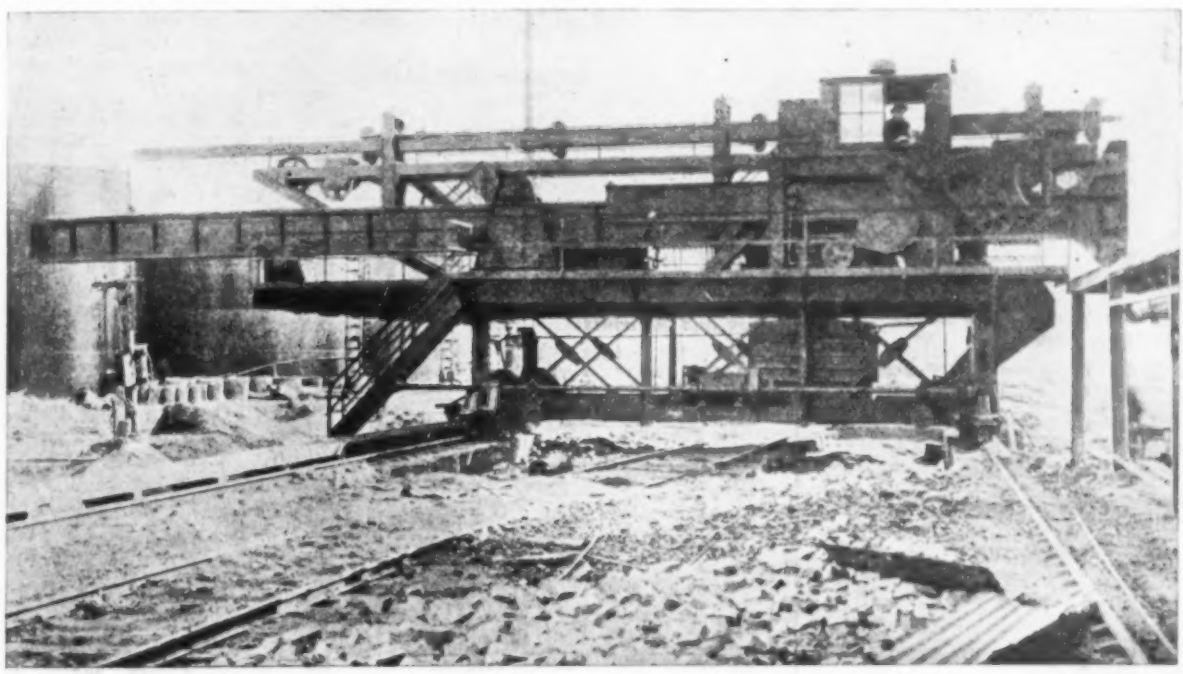
MARLBORO, MASS.—The Barlboro Metal Works Co. has been incorporated to make munitions by Hector E. Morneau, Arthur F. Blanchard, West Acton, Mass., Webster F. Blanchard, Lewis Blanchard, Greenfield, Mass.; Charles F. Connors and George A. Moore.

WORCESTER, MASS.—The Federal Engineering Corp. has been incorporated with $95,000 capital by George L. Baldwin, E. C. Kilburn and Frank P. Grebel, Auburn, Mass.

WORCESTER, MASS.—The Graton & Knight Mfg. Co. has let the contract for a brick and concrete, 4-story, 128 x 256-foot building for manufacturing at 36 Suffolk street, to cost $100,000.

WORCESTER, MASS.—The Rockwood Sprinkler Co.

STEEL PLANT EQUIPMENT
COKE OVEN MACHINERY
GAS PRODUCERS
ORE AND COAL HANDLING MACHINERY
SPECIAL CRANES
MINING MACHINERY
HYDRAULIC TURBINES



Coke Oven Machinery

Since 1899, when the first W-S-M Coke Pusher was designed and built, most large installations of by-product ovens have been served by W-S-M machines.

The leading builders of by-product coke ovens are our principal customers for W-S-M coke oven machinery.

The combined coke pusher, coal leveler and door extractor shown above represents the latest by-product coke oven practice. With a single operator it serves about 100 ovens.

Those interested in the operation or contemplating the installation of coke ovens should have Bulletin A8, "W-S-M Coke Oven Machinery".

THE WELLMAN-SEAVER-MORGAN CO.

CLEVELAND, OHIO, U.S.A.

of Massachusetts has let the contract for a brick, steel and reinforced concrete, 1-story, 53 x 69-foot boiler house.

BRIDGEPORT, CONN.—The Locomobile Co. of America, through the United States government, has let the contract for a brick and steel, 1-story, 36 x 43-foot boiler house.

HARTFORD, CONN.—The Pratt & Whitney Co. has awarded a contract to R. G. Bent & Co. for the erection of a foundry addition, 50 x 120 feet.

NEW BRITAIN, CONN.—The Stanley Rule & Level Co. will build a concrete, 1-story, 50 x 130-foot factory on Whiting street.

NEW HAVEN, CONN.—Fire in the heat treating department of the Tregor Motors Co., caused $5000 damage.

NEW BRITAIN, CONN.—The American Engineering Co. has been incorporated with $25,000 capital by Frank H. Miller, Leopold Gierymski and Henry Chotkowski.

Along The Atlantic Coast

BROOKLYN, N. Y.—Work will start shortly on a 50 x 50-foot addition to the plant of the Electric Welding Co., 744 Court street.

BUFFALO—The Presto-O-Lite Co. will build additions to its plant here soon.

BUFFALO—The Crosby Co. will build a metal factory on Pratt street.

BUFFALO—The Auto Products Mfg. Co. is having plans prepared for a factory on Genessee street.

BUFFALO—The Acme Pattern & Machine Co. is arranging to build a one-story addition, 20 x 32 feet.

BUFFALO—The Buffalo Aeroplane Corp. is preparing to build a factory 100 x 130 feet.

BUFFALO—The Aluminum Castings Co. will build a 1-story plant, 80 x 160 feet, at this place.

BUFFALO—The Pierce-Arrow Motor Car Co. has had plans prepared for a plant on the Niagara river road.

BUFFALO—The King Sewing Machine Co. is having plans prepared by R. I. Reidpath & Son for the erection of an addition to its plant.

BUFFALO—Rine & Nimil have the contract for the erection of a power plant at Wilkes Barre, Pa., for the Market Realty Co.

BUFFALO—The Monarch Knitting Co. Inc., will build a boiler house, 34 x 34 feet, and a dye shop, 55 x 100 feet.

BUFFALO—Francis G. Krone will remodel his plant on West Ferry street for the manufacture of machine parts.

BUFFALO—The United States Drawn Steel Co. has let the contract to J. W. Cowper of this city for a new plant.

BUFFALO—Contracts are being awarded by the American Car & Foundry Co. for the construction of a 50 x 125-foot foundry. J. W. Naylor, 37 Babcock street, is engineer in charge.

BUFFALO—The Lackawanna Bridge Co. received the general contract for constructing a 1-story, 50 x 100-foot foundry addition for the Strong Steel Foundry Co.

DUNKIRK, N. Y.—The Atlas Crucible Steel Co., Buffalo, plans the erection of an 80 x 100-foot warehouse, here.

ELMIRA, N. Y.—The Willys-Morrow Co. will build two additions, 87 x 180 feet each, to its plant near the Erie railroad tracks. The contract was let to the Lowman Construction Co. of this city.

ELMIRA, N. Y.—The James Mfg. Co. will build an addition to its plant here shortly.

ELMIRA, N. Y.—The Eclipse Machine Co. has let the contract for an addition to the Lowman Construction Co., this city.

JAMESTOWN, N. Y.—Plans for a 3-story, 60 x 200-foot factory building for the Art Metal Construction Co. have been placed in abeyance.

MAYBROOK, N. Y.—Alterations and additions, costing $10,000, will be made to the machine shop of the New York, New Haven & Hartford railroad. The H. Wales Lines Co., Meriden, Conn., will be in charge of the construction.

NEW YORK CITY—The Empire Metal Products Co. recently sold its plant to the National Clutch Co., Irvington, N. Y.

Government Inquiries

BIDS on the following equipment are desired by the navy department, bureau of supplies and accounts:

Four milling machines, 6517½, Washington.
10 geared head engine and turret lathes and milling machines, 6518½, Pensacola.
One milling machine, 6519½, eastern yard.
Eight pipe and thread cutting machines, 6521½, Philadelphia.
Motor-driven surfacers, 6527½, Brooklyn.
One drilling machine, 6528½, Philadelphia.
Disk grinding machines, 6529½, Philadelphia.
One engine lathe, 6532½, Newport.
One heavy duty hacksaw, 6538½, Boston.
Gap lathes, 6539½, Washington.
Five high speed hacksaws, 6541½, Philadelphia.
One drilling machine, 6546½, Washington.
One tool grinder, 6547½, Washington.
One power press, 6548½, Washington.
Four pedestal grinders, 6549½, Washington.
Two crank shapers, 6551½, Washington.
One cutting machine, 6552½, Washington.
Cutters, drills, grinders, etc., 6563½, Boston.
Eight heavy duty lathes,, 6579½, Alexandria, Va.
Sensitive sliding head drills, 6581½, Portsmouth.
Charging machines, 6589½, South Charleston.
Six milling slotter machines, 6602½, Washington.
One angle punch, 6606½, Boston.
Screw machines, 6611½, Norfolk.
Four air compressors, 6620½, Alexandria, Va.
Eight plain milling and grinding machines 6631½, Washington.
One each, shaper, saw sharpener and stretcher swage, 6633½, Philadelphia.

Schedule numbers, dates of opening and places of delivery follow the specifications of the tools.

NIAGARA FALLS, N. Y.—The Republic Carbon Co. is taking bids for four factory additions, 48 x 100, 90 x 144 and 80 x 340 feet.

OGDENSBURG, N. Y.—A $150,000 plant is being contemplated by the North Country Ship Building Corp. E. J. Burns is in charge of preliminary plans.

OSWEGO, N. Y.—P. Raby, 25 West Gayuga street, will build a 1-story foundry for G. J. Hensler to cost $50,000.

ROCHESTER, N. Y.—The Genessee Bridge Co. will build a fabricating plant 52 x 65 feet.

TONAWANDA, N. Y.—The John W. Cowper Co., Buffalo, has been awarded a contract to build several additions to the plant of the Pierce Arrow Motor Car Co. The work includes two testing buildings, two reassembling buildings and a boiler house.

ALTOONA, PA.—The Pennsylvania railroad is having plans prepared by Chief Engineer A. C. Shand, Broad Street Station, Philadelphia, for an addition to its electric power plant here.

BATH, PA.—The Pennsylvania Cement Co. has let the contract for the erection of a warehouse here.

BEDFORD, PA.—The Tile Waterpipe Co. will build a 3-story machine shop here to cost $15,000.

BOYERS, PA.—The Ohio Valley Sand & Gravel Co. will build an addition to its plant here soon. Walter K. Himilton is manager.

BRIDGEVILLE, PA.—The Universal Rolling Mill Co. has bought six acres on which to erect an addition.

CHAMBERSBURG, PA.—The Cumberland Valley railroad is considering improvements and new construction involving the expenditure of $200,000.

CLARENDON, PA.—The Tiona refinery is being rebuilt under the direction of Superintendent Keubler.

EMPORIUM, PA.—The Pennsylvania railroad has let the contract for an engine house and shop facilities here to cost $100,000, to Roydhouse, Arey & Co., 112 North Broad street, Philadelphia.

ENOLA, PA.—Irwin & Leighton, Philadelphia, have the contract for the erection of a machine shop here for the Pennsylvania railroad.

ERIE, PA.—The Modern Tool Co. is arranging to build a $10,000 addition.

ERIE, PA.—The Pittsburgh Steamship Co. has bought a site here and will build a machine shop.

ERIE, PA.—The Triangle Tool Co. is arranging to build an addition to its plant here.

ERIE, PA.—The Brown Folding Machine Co. has arranged to build a factory 100 x 140 feet at Eighteenth street and American avenue.

GREENCASTLE, PA.—The Landis Tool Co. plans plant improvements which will double its present capacity.

HILLSVILLE, PA.—The Carbon Limestone Co. will build a large addition to its plant soon.

KITTANNING, PA.—The Harbison-Walker Refractories Co. has bought three acres between Grant and Orr avenues and will erect a dust mill.

LOCK HAVEN, PA.—The Andrews Tanning Extract Co., recently organized with a capital of $300,000, will build an extract plant at Andrews, Cherokee county, N. C.

MANER, PA.—The Nassaue Steel Co. has bought the plant of the West Penn Chemical & Mfg. Co. and will establish an industrial plant.

MARCUS POINT, PA.—The National Aniline & Chemical Co. has let the contract for the erection of a plant here.

MARIETTA, PA.—The Gilliland Laboratories Co. will rebuild its plant here which was recently damaged by fire.

MEADVILLE, PA.—The Meadville Ice Mfg. Co. has let a contract to Charles R. Hall, Philadelphia, for the erection of an ice storage plant here.

MOUNT UNION, PA.—The war industries board proposes to build a $1,000,000 sulphuric acid plant here.

NORTHEAST, PA.—The Eureka Co. has arranged to build three additions.

PHILADELPHIA—Cramp & Co. have been awarded the general contract for the construction of the proposed government power house at Cape May, N. J.

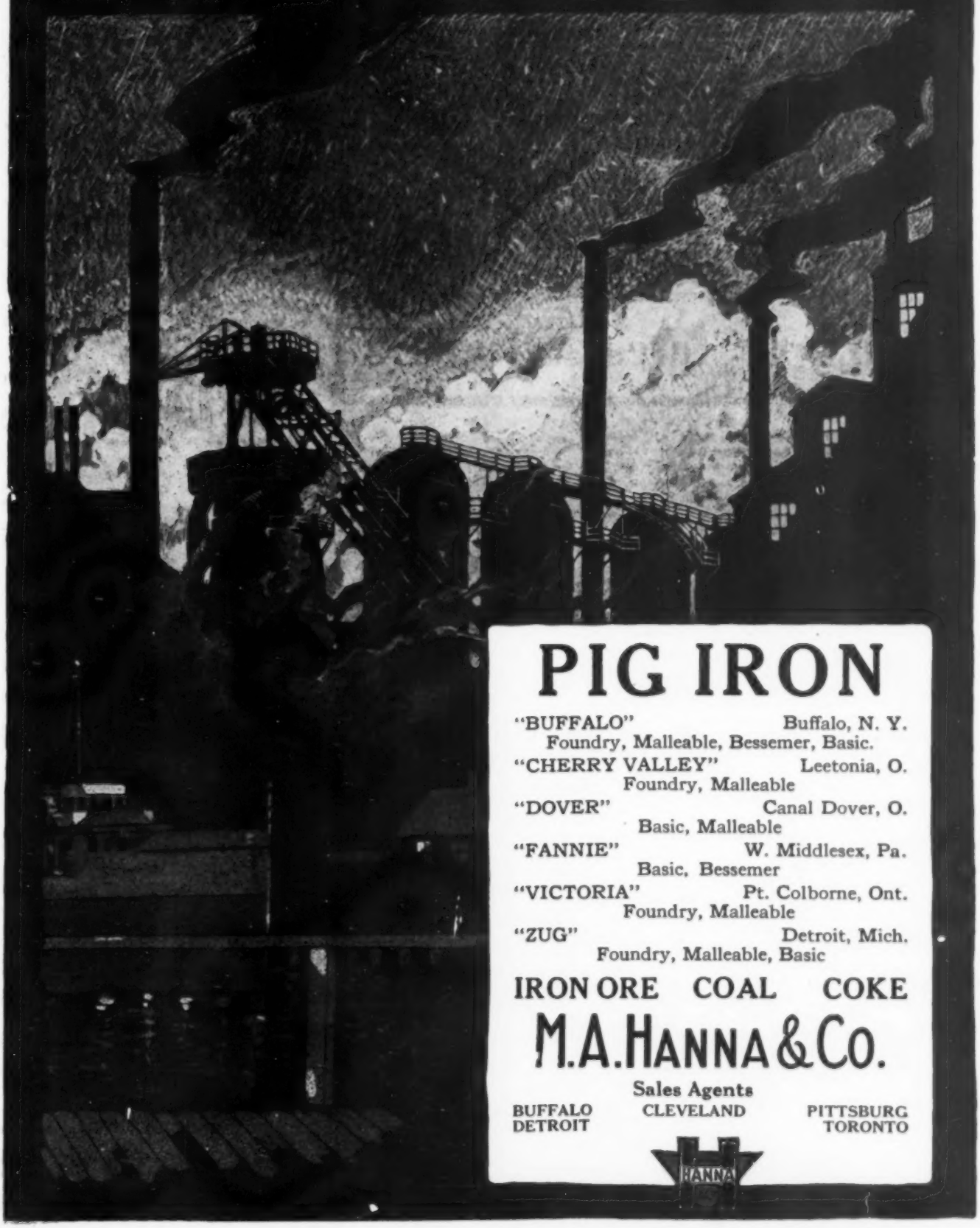
PHILADELPHIA—Alterations, costing $2000 will be made to the tin shop of the Atlantic Refining Co., here.

PHILADELPHIA—The government recently purchased 16 acres on which it is understood a large plant will be erected. Details are not available at this time.

PHILADELPHIA—The Tacony Ordnance Co. has awarded a contract for a $25,000 machine shop addition to the F. W. Mark Construction Co. The addition will be one story, 72 x 125 feet.

PITTSBURGH—The Ward-Mackey Biscuit Co. is ar-

HANNA



PIG IRON

"BUFFALO" Buffalo, N. Y.
Foundry, Malleable, Bessemer, Basic.

"CHERRY VALLEY" Leetonia, O.
Foundry, Malleable

"DOVER" Canal Dover, O.
Basic, Malleable

"FANNIE" W. Middlesex, Pa.
Basic, Bessemer

"VICTORIA" Pt. Colborne, Ont.
Foundry, Malleable

"ZUG" Detroit, Mich.
Foundry, Malleable, Basic

IRON ORE COAL COKE

M. A. HANNA & CO.

Sales Agents

BUFFALO CLEVELAND PITTSBURG
DETROIT TORONTO

HANNA

ranging to build a 3-story plant to cost $125,000 on Lexington avenue.

PITTSBURGH—The Davison Sand & Gravel Co. is erecting a 2-story addition. 40 x 105 feet.

PITTSBURGH—H. Foulkrod, Oliver building, has the contract for the erection of a garage and machine shop for the Gulf Refining Co., to cost $200,000.

PUNXSUTAWNEY, PA.—The Eldred Glass Co. has let the contract for a plant here.

RIDGWAY, PA.—The Cleveland Construction Co., Cleveland, has the contract for the government plant at Croyland, near here.

RUTHERFORD, PA.—The Reading Railway Co. will erect an engine house, shop and other buildings here.

SHARON, PA.—The Peter Iron Works Co. will build an addition to its plant here soon.

SHARON, PA.—The Sharon Steel Hoop Co. will build two open hearth furnaces at its Lowellville plant.

SHARPSBURG, PA.—The Sharpsburg Boiler Works has let the contract for an addition 70 x 110 feet.

WYOMING, PA.—The Wyoming Shovel Co. has had plans prepared for a one-story addition, 75 x 100 feet.

YORK, PA.—The York Mfg. Co. has let the contract for an addition to its plant to cost $10,000.

YORK, PA.—The General Machine Works has had plans prepared for plant additions to cost $15,000.

BLENHEIM, N. J.—Preliminary bids are being received by Horace Reed, Philadelphia, on a machine shop and office building to be erected here. The proposed structure will be one and two stories, 75 x 150 feet. H. L. Shay, Philadelphia, is architect.

BLOOMFIELD, N. J.—The contract for a $17,000 warehouse, one story, 100 x 200 feet, has been awarded by the International Arms & Fuse Co. to the Truscon Steel Co., 110 West Fortieth street, New York.

CAMDEN, N. J.—Armstrong & Latta, Philadelphia, have received the general contract from the New York Shipbuilding Corp. for constructing a $35,000 pump house.

NEWARK, N. J.—Franklin Williams is having plans prepared for the erection of a foundry, 50 x 150 feet. Marshall N. Shoemaker, 207 Market street, is architect.

NEWARK, N. J.—Bids will be received shortly by the Art Metal Works on alterations and additions, costing $20,000. A structure, three stories, 80 x 100 feet, is included in the proposed expansion.

Central States Activities

BAY CITY, MICH.—Detroit and Cleveland capital is behind the newly-organized Dafoe Shipbuilding Co which has started work on construction of its building and keels of steel tugs it is to build for the government. The main building, a punch shop, will be 60 x 200 feet.

DETROIT—The Central Forge Co. will build three 1-story factory buildings, 96 x 192 feet, 60 x 301 feet and 63 x 301 feet, at a cost of $300,000.

DETROIT—The Detroit Copper & Brass Rolling Mills, Clark avenue, is having plans prepared for an addition to cost $350,000.

DETROIT—The Detroit Auto Piston Co., David Rosenthal manager, will build a 1-story plant, 60 x 104 feet, costing $12,000.

DETROIT—The Chicago Pneumatic Tool Co. is having plans prepared by H. S. Angell, architect, 722 Free Press building, for a 5-story reinforced concrete plant, 60 x 181 feet.

DETROIT—The Packard Motor Car Co., James H. Marks, construction engineer, Harper and Strong avenues, will build a 3-story erecting plant, 227 x 323 feet, costing $700,000 and a 1-story enameling plant, 152 x 200 feet, costing $75,000.

ESCANABA, MICH.—The North Michigan Water Co., Scranton, Pa., has given Escanaba an option to purchase its entire waterworks system and plant at $298,650. A special election will be held, Nov. 5, to decide on the purchase and vote on a bond issue to cover the purchase price.

HAMTRAMCK, MICH.—The Michigan Smelting & Refining Co. will build a 1-story power house, 44 x 48 feet, costing $10,000.

LANSING, MICH.—The entire plans of the Olds Motor Works has been converted to production of aircraft and Liberty motors. Plant additions and new tool and machinery equipment will entail an expenditure of $1,250,000.

MANISTIQUE, MICH.—The Manistique Pulp & Paper Co. has undertaken improvements and extensions of its plant estimated to cost $500,000. The work is being done by the company under direction of H. J. Stoerer, consulting hydraulic engineer.

PORT HURON, MICH.—Acheson Oildag Co., of which M. W. Taylor is manager, will double the size of its plant. The buildings will cost $35,000.

VERNON, MICH.—The Plymouth Mining Co. has awarded a contract to the Worden-Allen Co., Milwaukee, for erection of a 2-story brick and steel roundhouse and machine shop for its railroad system at Vernon, Mich. The building will be 100 x 120 feet, two stories of brick and steel and estimated to cost $150,000. The Lackawanna Bridge Co., 203 South LaSalle street, Chicago, is consulting engineer.

CHICAGO—The U. S. Ball Bearing Co., 4535 Palmer street, is building a 1-story plant, 81 x 84 feet, to cost $13,000.

CHICAGO—The James A. Brady Foundry Co., G. S. Burtis president, Forty-fifth street and Western avenue, is building a foundry addition and core oven, 1-story, 90 x 90 feet, to cost $30,000.

EAST ST. LOUIS, ILL.—The Flexible Pipe Coupling Co., capitalized at $10,000, has been chartered by W. K. Cannady, H. L. Browning and R. Gillespie.

GALESBURG, ILL.—The Galesburg Sheet Metal Works, capitalized at $10,000, has been chartered by Clarence H. Lauerman, Fred Madvig and Mrs. Gertrude Lauerman.

MATTOON, ILL.—The H. W. Clark Co., manufacturer of meter boxes and waterworks appliances, is rebuilding its plant and is in the market for foundry equipment.

HAMMOND, IND.—The Ace Tractor Co., capitalized at $100,000, has been chartered to manufacture tractors by Max Salmon, Henry Whitaker and Frank Gossett.

INDIANAPOLIS—The Indiana Iceless Cooler Co., capitalized at $75,000, has been chartered to manufacture refrigerators, by John W. Losh, Edward H. Mitler and Frank H. Shanahan.

PERU, IND.—The Pittsburgh Model Engine Co. is building two additions, 40 x 240 feet and 30 x 180 feet, to cost $100,000.

SOUTH BEND, IND.—The Lincoln Way Brass Foundry Co., capitalized at $18,000, has been chartered to manufacture metal products by Charles Heckathorn, Henry Johnson and Sherman P. Stults.

CLEVELAND—The Electric Steel Forge Co. plans the erection of a 1-story, 80 x 400-foot factory.

CLEVELAND—The Production Foundry Co. recently was incorporated with $25,000 capital stock by B. R. Morgan and others.

CLEVELAND—The American Sheet & Tin Plate Co., 7037 Bessemer avenue, has had plans prepared for the erection of a garage, 50 x 100 feet.

CLEVELAND—The Cleveland Electric Metal Co., 2391 West Thirty-eighth street, is contemplating the erection of a building, 1-story, to cost about $50,000.

CLEVELAND—The S. F. K. Steel Barrel Co., Jones road, has awarded the contract for the erection of a 2-story, 40 x 108-foot factory.

CLEVELAND—The Permanent Machine Co., 5209 Prospect avenue, has acquired a site adjoining its plant on East Fifty-fifth street, and plans the erection of an addition.

CLEVELAND—Steel Products Co., 2196 Clarkwood road, will erect a new plant which, equipped, will cost about $155,000. The building will be 90 x 123 feet, of concrete and brick with steel spans. Contracts were let recently for erection of an addition to main plant of the company. 60 x 125 feet, and a power house, 70 x 100 feet.

COLUMBUS, O.—J. Herrell, 431 Sycamore street, recently awarded a contract for the erection of a factory, 1-story, 100 x 120 feet.

DAYTON—The Dayton Pneumatic Tool Co. has awarded a contract for the erection of a factory, estimated to cost $20,000.

DAYTON—The Dayton-Wright Co. awarded a contract for the erection of a 1-story factory, to cost about $75,000.

ELMWOOD, O.—The Laidlaw-Dunn-Gordon Co. has had plans prepared for the erection of machine shop and foundry, 40 x 100 feet.

FINDLAY, O.—The Adams Axle Co. is in the market for vertical boring mills of various sizes.

MANSFIELD, O.—The Hughes Keenan Co., 206 Mulberry street, is contemplating the erection of a 1-story factory.

ORRVILLE, O.—The Ohio Blower Co., Cleveland, O., has awarded the contract for the eretcion of a 2-story, 65 x 72-foot pattern shop, and a 1-story, 63 x 98-foot machine shop.

PRESTONBURG, KY.—The Eastern Kentucky Service Co. will build a power plant.

WHITESBURG, KY.—The Elkhorn Jellico Coal Co. will build an addition to its power plant.

BELLE, W. VA.—The Charleston Chemical Co., Charleston, W. Va., will rebuild its plant here at a cost of $400,000.

CHARLESTON, W. VA.—The Baltimore & Ohio railroad will build a roundhouse here.

CHARLESTON, W. VA.—The Diamond Ice & Coal Co. proposes to increase the capacity of its plant soon.

CHARLESTON, W. VA.—The Kanawha Drug Co. will build a plant, 32 x 60 feet, and has let the contract to W. A. Abbott, 12 Columbia avenue, Charleston.

CLARKSBURG, W. VA.—The State Board of Control is arranging to build a sewage disposal plant at Watson, near here.

FAIRMONT, W. VA.—The War Department will build a phosphorus plant near here to cost $500,000.

FAIRMONT, W. VA.—The American Phosphorus Co. will build a plant here to cost $500,000.

HUNTINGTON, W. VA.—The Na-Peer Tire Co., Akron, O., is considering building a plant here.

LOGAN, W. VA.—Armour & Co. will build a cold storage plant here.

MOUNT HOPE, W. VA.—The New River Co. will build machine shops and a warehouse to cost $100,000.

NEW CUMBERLAND, W. VA.—The Heyward Steel Co. is planning improvements to its plant.

PARKERSBURG, W. VA.—The M. V. Construction Co. has the contract for building a plant at Riverside, near here.

SUTTON, W. VA.—The Sutton Chemical Co., William M. McCabe manager, will build a plant here to cost $700,000.

WHEELING, W. VA.—The Wheeling Pulverizing Co. will build a factory to cost $5000 and has let the contract to George Reed, this city.

WHEELING, W. VA.—Chester & Fleming, Union

Bank building, Pittsburgh, have had plans prepared for a filtration plant here to cost $500,000.

WHEELING, W. VA.—The Mineral Pulverizing Co., capital $12,000, has been organized by L. J. Windsor, of this city, and will fit up a plant with pulverizing machinery.

APPLETON, WIS.—The Langstadt-Meyer Electric Co. has leased the garage and repair shop heretofore occupied by the Appleton Motor Car Co. and is installing new equipment.

APPLETON, WIS.—J. H. Wait and J. Dittman Co., Appleton, have taken contracts for about 3000 lineal feet of water main extensions, furnishing pipe and other material, besides labor.

ASHLAND, WIS.—L. O. Peppard, 1712 Irving avenue, Minneapolis, has been awarded the contract for building an addition to the round house and several new tool buildings for the Chicago & Northwestern railroad.

FOND DU LAC, WIS.—Plans have been prepared for a reinforced concrete bridge of two 70-foot spans to cost $14,000.

GRAND RAPIDS, WIS.—The common council has authorized a one-mill tax levy, amounting to $7000 for 1919, to form the nucleus of a fund to be used for construction of a new bridge across the Wisconsin river at the close of the war.

HARTFORD, WIS.—A warehouse, 50 x 260 feet, 1-story, will be erected by the Kissel Motor Car Co.

HARTFORD, WIS.—A plant for the manufacture of gas engine mufflers will be erected here by the International Steel Products Co., Milwaukee, which has acquired a site and is breaking ground for a 1-story brick and concrete shop, 70 x 120 feet.

MADISON, WIS.—The Doble System, Inc., capitalized at $25,000, has been chatered to manufacture kerosene automatic heating systems, by James B. Ramsey, William S. Cargill and Albert E. Smith.

MARINETTE, WIS.—L. A. DeGuere, consulting engineer, Grand Rapids, Wis., has awarded the general contract for erection of a sulphite mill and two towers for the Marinette-Menominee Paper & Pulp Co. to the Northern Boiler & Structural Co., Appleton, Wis.

MENASHA, WIS.—B. Rosen & Co., scrap iron handlers, will erect a warehouse and shipping platform, 50 x 70 feet, of concrete and brick, with metal sash and equipped with an elevator.

MILWAUKEE—The Pressed Steel Tank Co. is engaged in the erection of an addition, 70 x 185 feet, and a 2-story office, 48 x 80 feet.

MILWAUKEE—Ed. Steigerwald & Co., 3607 Vliet street, have taken the general contract for erection of the first unit of the new central continuation school, to cost about $200,000.

MILWAUKEE—The Hausman Motorcycle Co., capitalized at $600,000, has been chartered to manufacture motor vehicles, by Julius H. Zahn, 519 Caswell block, H. J. Hausman and M. Javanovish.

MILWAUKEE—The Northwestern Chemical Co. has engaged Architects C. F. Ringer & Son to prepare plans for a 1-story, reinforced concrete and brick manufacturing plant, 50 x 150 feet.

MILWAUKEE—The Chain Belt Co. will enlarge its malleable iron foundry by erection of a 1-story building, 140 x 295 feet. The general contract has been let to the R. L. Reisinger Co., 1327 First National bank building, Milwaukee.

NEENAH, WIS.—The James Aylward Foundry Co. has broken ground for a 1-story brick and concrete foundry and core-room addition, which will cost about $20,000 with full equipment.

NORTH MILWAUKEE, WIS.—The Universal Cement Mold Co., Fond du Lac, Wis., has selected North Milwaukee as the site of its permanent plant, designs for which now are being made. A. S. Greene, North Milwaukee, is secretary.

OSHKOSH, WIS.—Construction of a bridge over the Fox river at Light street has been deferred until the close of the war at the request of the government.

OSHKOSH, WIS.—A 2-story shop addition, 40 x 100 feet, will be erected for the Oshkosh Mfg. Co., 412 South Main street, by the Fluor Bros. Construction Co.

SHEBOYGAN FALLS, WIS.—The Falls Motors Corp. has completed plans for a 1-story brick and mill machine shop addition, 120 x 272 feet, to be erected by the Immel Construction Co., Fond du Lac, Wis.

TWO RIVERS, WIS.—The Kahlenberg Mfg. Co. has started construction work on a testing and shipping room, 60 x 175 feet, to be equipped with a 5-ton electric traveling crane and modern testing shop devices.

UNION GROVE, WIS.—An electrically-operated dairy products plant costing $35,000 will be erected here by the Electropure Dairy Co., 53 West Jackson boulevard, Chicago. The building will be 50 x 85 feet, fireproof, two stories.

WAUPACA, WIS.—C. H. Whillips has taken a contract to construct and equip a water purifying, iron removing plant at the Wisconsin State School for dependent children at Sparta, Wis. The plant will have a capacity of 6500 gallons a day. W. G. Kirchhoffer, Madison, Wis., is consulting engineer.

WAUSAU, WIS.—The Marathan Electric Mfg. Co. is enlarging its plant by erecting a 2-story addition, 40 x 48 feet.

The Pacific Northwest

SEATTLE—The Skinner & Eddy Shipbuilding Corp., 1201 Railroad avenue, will build a 2-story pipe shop, 80 x 250 feet, to cost $35,000.

SEATTLE—The Seattle Machine Works will build a boiler and blacksmith shop, 41 x 60 feet, to cost $10,000.

SEATTLE—The Seattle Copper Works, Inc., has been incorporated with $10,000 capital and plans the erection of a foundry.

SEATTLE—L. P. Ingram, 1503 Tenth avenue, has been awarded a contract by the Franklin Tool Works to erect a heavy-timbered foundry, 80 x 100 feet, at a cost of $6500.

SEATTLE—D. W. Rutherford, contractor, Tacoma, Wash., is completing the driving of piling for the foundation of the 5-story concrete warehouse and office building planned by Architect John Graham, for the Pacific Net & Twin Co.

SEATTLE—The H. Koppers Co., Pittsburgh, will begin at once construction of an explosive plant for the government ordnance department at 2101 Northlake avenue, including a brick structure, 30 x 35 feet, 15 large steel tanks, necessary piping and pumping machinery and other equipment.

VANCOUVER, B. C.—Work has been started on an addition to the Rands Iron Works at this place. A furnace room, to cost $3500, is being added.

PORTLAND, ORE.—The Pacific Forging & Machinery Co. is contemplating the erection of a foundry, 50 x 100 feet.

PORTLAND—ORE.—A. D. McDougall and Nat McDougall, of Guthrie & Co., Inc., and Charles C. Overmire, have leased a site 200 x 680 feet, for a foundry and machine shop.

PORTLAND, ORE.—The Specialty Foundry & Machine Works is devoting its eptire output to the construction of war materials. Iron castings for ships are manufactured and a specialty is made of engine parts.

PORTLAND, ORE.—Contract for construction of the $500,000 steel rolling mill of the Pacific Coast Steel Co. at this place has been awarded to Grant Smith & Co. The contract also calls for installation of machinery, already ordered.

OAKLAND, CAL.—The Union Construction Co., 604 Mission street, San Francisco, will build a plate and angle shop, outfitting wharf, compressor house, store house ,etc., at a cost of $100,000.

LOS ANGELES—The Los Angeles Wire & Iron Works, 129 East Seventh street, has been organized to manufacture metal specialties by Andrew Biescar and others.

LOS ANGELES—The Atlas Brass Foundry, capitalized at $10,000, has been chartered to manufacture castings by M. M. Anderson, Frederick W. Heiser and Charles W. Lyon.

LOS ANGELES—The Pike Automobile & Trailer Works has been organized to manufacture motor parts. Joseph L. Pike, 225 West Forty-seventh place, heads the company.

Business In Canada

NANAIMO, B. C.—John W. Coburn is in the market for material and equipment for six ships of 4000 tons each.

POWELL RIVER, B. C.—The mills owned by the Powell River Pulp & Paper Co. were damaged by fire with a loss of $40,000. The company will rebuild.

VANCOUVER, B. C.—The Tudhope Electric Metals Co. will begin work at once on the erection of an electric foundry. The M. P. Cotton Co., False Creek, B. C., has the contract.

INGERSOLL, ONT.—The John Morrow Co. is building an addition to its twist drill factory and to its screw plant.

LONDON, ONT.—Plans are being prepared for a knitting factory for Penmans, Ltd., 197 Dundas street, to cost $150,000.

OWEN SOUND, ONT.—The Northern Bolt Screw & Wire Co., Seventeenth street east, is building a 2-story iron and frame plant to cost about $40,000.

SOREL, ONT.—Engineer J. E. Gill is in the market for a pump of 1,500,000-gallons capacity; one of 3,500,000-gallons capacity; gasoline meter; also water conduit, 18 inches in diameter.

MONTREAL, QUE.—The Canada Cement Co. has taken over the old Delorimer race track and will erect a plant for the manufacture of 9.2-inch shells for the American government. The plant will cost $1,000,000. Frank P. Jones is manager.

TORONTO, ONT.—Lawrence Solomon has a permit to erect a garage at Simcoe and King streets, to cost $75,000.

TORONTO, ONT.—The Booth-Coulter Copper & Brass Co., Ltd., 115 Sumach street, is building a 2-story brick and metal addition to its plant.

TORONTO, ONT.—The Lincoln Meter Co., Ltd., has been incorporated to manufacture electric meters, machinery, devices, appliances, etc., with $100,000 capital stock, by Edwin G. Long, Bay and Melinda streets; Harry S. Sprague, Albert Mearns and others of Toronto.

Iron and Steel Prices

Corrected to Tuesday Noon

IRON ORE

Superior Ores, Per Ton, Lower Lake Ports	
Old range Bessemer, 55 iron	$6.65
Mesabi Bessemer, 55 iron	6.40
Old range non-Bess., 51½ iron	5.90
Mesabi non-Bess., 51½ iron	5.75

WAREHOUSE PRICES

Steel bars, Chicago	4.17c
Steel bars, Cleveland	4.07c
Steel bars, Detroit	4.13c
Steel bars, Philadelphia	4.13c
Steel bars, New York	4.145c
Steel bars, St. Louis	4.24c
Steel bars, Cincinnati	4.13c
Steel bars, St. Paul	4.395c
Steel bars, Buffalo	4.10c
Iron bars, Buffalo	4.70c
Iron bars, Chicago	4.77c
Iron bars, Cleveland	4.67c
Iron bars, Detroit	4.75c
Iron bars, St. Louis	4.84c
Iron bars, Cincinnati	4.13c
Iron bars, Philadelphia	4.73c
Iron bars, New York	4.745c
Shapes, Chicago	4.27c
Shapes, Detroit	4.23c
Shapes, St. Louis	4.34c
Shapes, St. Paul	4.495c
Shapes, New York	4.245c
Shapes, Cleveland	4.17c
Shapes, Philadelphia	4.23c
Shapes, Buffalo	4.20c
Shapes, Cincinnati	4.23c
Plates, Buffalo	4.45c
Plates, Chicago	4.52c
Plates, Detroit	4.48c
Plates, St. Louis	4.59c
Plates, St. Paul	4.745c
Plates, New York	4.495c
Plates, Cleveland	4.42c
Plates, Philadelphia	4.48c
Plates, Cincinnati	4.48c
No. 10 blue anl. sheets, Chicago	5.52c
No. 10 blue anl. sheets, Cleveland	5.42c
No. 10 blue anl., Buffalo	5.45c
No. 10 blue anl. sheets, St. L.	5.59c
No. 10 blue anl. sheets, Cincinnati	5.48c
No. 10 blue anl. sheets, St. Paul	5.745c
No. 10 blue anl. sheets, Detroit	5.48c
No. 28 black sheets, Chicago	6.52c
No. 28 black sheets, Cleveland	6.42c
No. 28 black sheets, Cincinnati	6.48c
No. 28 black, Detroit	6.48c
No. 28 black sheets, St. L.	6.59c
No. 28 black sheets, St. Paul	6.745c
No. 28 galv. sheets, Chicago	7.77c
No. 28 galv. sheets, Cleveland	7.67c
No. 28 galv. sheets, Cincinnati	7.73c
No. 28 galvanized, Detroit	7.73c
No. 28 galv. sheets, St. L.	7.84c
No. 28 galv. sheets, Buffalo	7.70c

IRON AND STEEL SCRAP

(Prices in Gross Tons)

STEEL WORKS USE

Bundled sheets, Cincinnati	$24.50 to 25.00
Bundled sheets, Pittsburgh	28.00 to 29.00
Bundled sheets, Cleveland	26.00 to 27.00
Bundled sheets, Buffalo	25.00 to 26.00
Boiler plate, cut, No. 1, Chicago	28.00 to 28.50
Boiler plate, cut, No. 1, St. Louis	26.50 to 27.00
Frogs, switches, guards, St. Louis	28.50 to 29.00
Frogs, switches, guards, Chicago	29.00
Heavy melting steel, Pittsburgh	29.00
Heavy melting steel, Buffalo	30.00
Heavy melting steel, Chicago	29.00
Heavy melting steel, Cleveland	29.00
Heavy melting steel, Cincinnati	28.50 to 29.00
Heavy melting steel, east. Pa.	28.00 to 29.00
Heavy melting steel, N. Y.	26.00
Heavy melting steel, St. L.	28.50 to 29.00
Heavy melting steel, Birmingham	27.00 to 28.00
Baled sheets, Cleveland	28.50 to 29.00
Baled sheets, Pittsburgh	28.00 to 29.00
Baled sheets, Chicago	29.00
Knuckles, couplers, Chicago	34.00
Knuckles, couplers, St. Louis	33.00 to 33.50
Low phos. steel, Buffalo	37.50
Low phos. steel, Pittsburgh	39.00
Low phos. crops, eastern Pa.	39.00
Low phos guaranteed E. Pa.	36.50
Shoveling steel, Chicago	29.00
Shoveling steel, St. Louis	28.00 to 28.50
Steel rails, short, Chicago	34.00
Steel rails, short, Cleveland	34.00
Steel rails, short, St. Louis	32.50 to 33.00
Steel rails, old, Birmingham	29.00 to 30.00
Stove plate, Chicago	29.00
Stove plate, Cincinnati	23.00 to 23.50
Stove plate, St. Louis	25.50 to 26.00
Stove plate, N. J. points	27.25
Stove plate, Birmingham	25.00 to 26.00
Stove plate, Buffalo	28.50 to 29.00
Stove plate, eastern Pa.	29.00
Stove plate, Cleveland	25.00 to 25.50
Stove plate, Pittsburgh	29.00

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.40
Boston	4.60
Philadelphia	4.10
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	6.10
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.75
Cincinnati	1.75
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	24.5 cents
Philadelphia	23.0 cents
Boston	27.0 cents
Buffalo	21.5 cents
Baltimore	22.5 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

IRON MILL USE

Busheling, No. 1, Cleveland	30.50 to 31.00
Busheling, No. 1, Buffalo	29.00 to 30.00
Busheling, No. 1, Pittsburgh	30.00 to 30.50
Busheling, No. 1, Cincinnati	26.00 to 26.50
Busheling, No. 1, Chicago	30.50 to 31.00
Busheling, No. 2 Chgo.	21.50 to 22.50
Busheling, No. 1, St. Louis	30.00 to 30.50
Cast borings, New York	16.75 to 16.90
Cast borings, eastern Pa.	19.00
Cast borings, Buffalo	18.00 to 19.00
Cast borings, Cleveland	19.00
Cast borings, Cincinnati	17.00 to 18.00
Cast borings, Pittsburgh	19.00
Cast borings, Birmingham	17.00 to 18.00
Cast borings, Chicago	18.00 to 19.00
Cast borings, St. Louis	18.50 to 19.00
City wrought, long, N. Y.	30.00
Cut forge, Chicago	32.50 to 33.00
Forge No. 1, eastern Pa.	28.00 to 29.00
Grate bars, Buffalo	27.50 to 28.00
Grate bars, Cleveland	25.50 to 26.00
Grate bars, N. J. points	27.25
Iron axles, Pittsburgh	46.50
Iron axles, Cincinnati	43.50 to 44.00
Iron axles, Cleveland	46.50
Iron axles, Chicago	46.50
Iron axles, eastern Pa.	46.50
Iron axles, St. Louis	46.00 to 46.50
Iron axles, Buffalo	45.00 to 47.00
Iron rails, Chicago	39.00
Iron rails, Buffalo	36.00 to 37.00
Iron rails, Cincinnati	34.00 to 35.00
Iron rails, St. Louis	38.50 to 39.00
Iron rails, Cleveland	37.00 to 38.00
Machine turnings, Cincinnati	18.00 to 18.50
Machine turnings, Cleveland	19.00
Machine turnings, Buffalo	18.00 to 18.50
Machine turnings, N. Y.	16.75 to 16.90
Machine turnings, Pittsburgh	18.00 to 19.00
Machine turnings, east. Pa.	19.00
Machine turnings, Birmingham	16.00 to 17.00
Machine turnings, Chicago	18.00 to 19.00
Machine shop turnings St. Louis	18.50 to 19.00
Pipes and flues, Cleveland	28.00 to 29.00
Pipes and flues, Chicago	29.00
Pipes and flues, St. Louis	27.50 to 28.00
R. R. mach. cast, No. 1, Buffalo	34.00
R. R. wrgt. No. 1, Buffalo	34.00
R. R. wrgt. No. 1, east Pa.	34.00
Railroad wrgt. No. 1, Cincinnati	33.50 to 34.00
Railroad wrgt., No. 1, Cleveland	34.00
R. R. wrought, No. 1, Pittsburgh	34.00
Railroad wrgt., No. 2, Chicago	32.50 to 33.00
Railroad wrought, No. 1, Chicago	33.50 to 34.00
R. R. wrought, No. 1, Birmingham	31.00 to 34.00
No. 1 yard wrought, Eastern Pa.	33.00
No. 1 bushelings wrgt., East. Pa.	31.00
Sheet wrought, Pittsburgh	34.00
Railroad wrgt., No. 1, St. Louis	33.00 to 33.50
Railroad wrought, No. 2	32.00 to 32.50
Wrought pipe, Buffalo	27.00 to 28.00
Wrought pipe, East. Pa.	33.00
Wrought pipe, ungraded, East. Pa.	29.00

IRON OR STEEL WORKS USE

Axle turnings, Cleveland	$24.00
Axle turnings, Buffalo	24.00
Heavy axle turnings, East. Pa.	24.00
Heavy axle turnings, Pitts.	24.00
Shafting, New York	35.50
Shafting, East. Pa.	39.00
Steel car axles, Birmingham	38.00 to 40.00
Steel car axles, Pittsburgh	46.50
Steel car axles, New York	43.00
Steel car axles, Buffalo	44.00 to 46.00
Steel car axles, Cleveland	44.00
Steel car axles, East. Pa.	46.50
Steel car axles, Chicago	46.50
Shafting, St. Louis	38.00 to 39.00
Steel car axles, St. Louis	46.00 to 46.50

IRON FOUNDRY USE

Car wheels (iron), Pittsburgh	$29.00
Car wheels (steel), Pittsburgh	34.00 to 35.00
Car wheels, East. Pa.	29.00
Car wheels, Buffalo	29.00
Car wheels, Chicago	29.00
Car wheels, St. Louis	28.50 to 29.00
Car wheels, Birmingham	29.00 to 30.00
Car wheels, Cleveland	30.00
Tram car wheels, Birmingham	27.00 to 29.00
Cast, No. 1, Birmingham	31.00 to 34.00
Cast No. 1, cupola, East. Pa.	34.00
Cast, No. 1, Cleveland	33.00 to 34.00
Cast, No. 1, Cincinnati	33.00 to 34.00
Cast, 1, heavy, New York	32.25 to 32.50
Cast, 1, machy., New York	32.25 to 32.50
Cast, No. 1, Chicago	34.00
Cast, No. 1, Pittsburgh	32.50 to 33.00
Cast, No. 1, St. Louis	32.00 to 32.50
Malleable, Cincinnati	30.00 to 34.00
Malleable, Cleveland	30.00 to 34.00
Malleable, Buffalo	29.00 to 34.00
Malleable, Pittsburgh	33.00 to 34.00
Malleable, East. Pa.	29.00
Malleable, cupola, East. Pa.	33.00
Malleable, railroad, Chicago	34.00
Malleable, agricultural, Chicago	33.00 to 33.25
Malleable, railroad, St. Louis	32.00 to 32.50
Malleable, agricultural, St. Louis	31.00 to 31.50

MISCELLANEOUS USES

Boiler punchings, Chicago	36.00 to 36.50
Reroll, rails, 5 ft. and over, Pitts.	34.00
Reroll, rails, 5 ft. and over, Chi.	34.00
Reroll, rails, 5 ft. and over, E. Pa.	34.00
Reroll, rails, 5 ft. and over, St. L.	33.50 to 34.00
Reroll, rails, 5 ft. or over, Cleve.	34.00
Rerolling rails, long, Birmingham	37.50 to 38.50
Locomotive tires, Chicago	45.50 to 46.50
Locomotive tires, St. Louis	42.50 to 43.00